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# QCSEE Over-the-Wing Engine Acoustic Data

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## QCSEE OVER-THE-WING ENGINE ACOUSTIC DATA

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### SUMMARY

The over-the-wing (OTW) Quiet, Clean, Short-Haul Experimental Engine (QCSEE) was tested at the NASA Lewis Engine Noise Test Facility. A boiler-plate (non-flight-weight), high-throat-Mach-number, acoustically treated inlet and a D-shaped OTW exhaust nozzle with variable-position side doors were used in the tests along with wing and flap segments to simulate an installation on a short-haul transport aircraft. All of the acoustic test data from 10 configurations are documented in tabular form. Some selected narrowband and 1/3-octave-band plots of sound pressure level are presented.

### INTRODUCTION

As part of a broad-based NASA program to provide a technology base for future propulsion requirements for powered-lift aircraft, the Quiet, Clean, Short-Haul, Experimental Engine (QCSEE) program was begun by the Lewis Research Center in 1974 (refs. 1 and 2). Both an over-the-wing (OTW) and an under-the-wing (UTW) experimental engine were designed and built under this program. The OTW design was reported in references 3 and 4. The initial buildup of the OTW engine was tested at the contractor's test site. Initial OTW test results were reported by the contractor in reference 5. The OTW engine was inspected, refurbished, and delivered to the NASA Lewis Research Center in June 1977 for further testing. Results of QCSEE testing at Lewis were reported in references 2, 6, and 7. Reference 6 compares NASA and contractor results of aeroacoustic tests for the engine alone. Reference 2 presents the powered-lift system noise results for two configurations of the OTW engine. Reference 7 compares the powered-lift system noise for the UTW and the two configurations of the OTW from reference 2. This report documents in a consistent format all of the acoustic test results from the 10 configurations obtained during the OTW experimental program at Lewis. These data are thus available for further analytical study or for comparisons that are beyond the scope of this report.

The 93 408-N (21 000-lb) thrust engine incorporates many low-noise design features. In addition to a "hybrid" (high-throat-Mach-number, acoustically treated) inlet, it has wide rotor-stator spacing, frame treatment and treated vanes, stacked treatment in the core to attenuate both high-frequency turbine noise and low-frequency core noise, and removable fan exhaust wall panels and a splitter. The fan stage was designed with 33 relatively long-chord stators that were large enough to be structural members. The vane-blade ratio therefore was 33/28, which was insufficient to produce acoustical cutoff of the fundamental blade passing tone due to rotor-stator interaction. The loss of this acoustic feature was to be compensated for, at least partially, by the large rotor-stator axial spacing. Details of the acoustic design are contained in references 8 and 9. The QCSEE in-flight noise goal of 95 EPNdB (fig. 1) at a 152-m (500-ft) sideline required all of the afore-said treatment for a four-engine aircraft operating out of a 610-m (2000-ft) runway.

The engine was tested at the Engine Noise Test Facility with wing and flap segments simulating an installation on a short-haul transport aircraft. The engine was also tested alone in order to separate both the jet interaction noise and the wing shielding factors from the total noise with the wing and flap.

The engine configuration was varied in a number of ways. The engine was tested with a bellmouth inlet and also with a boilerplate high-throat-Mach-number (0.79) inlet that could be acoustically treated to suppress forward-radiated fan noise at lower than design inlet Mach numbers. The acoustically treated fan duct splitter was removed from some tests. Wall treatment was taped and the stacked core treatment was removed for some configurations. A D-shaped exhaust nozzle that had variable-position side doors was used for all of the tests.

The engine was run over a range of power settings from flight idle to takeoff rating at two exhaust nozzle side-door positions of 11.5° and 25° open for the engine-alone tests and at 35° open for the wing and flap tests.

The results are presented as narrowband spectra and 1/3-octave-band plots for selected microphone locations at some test conditions and as 1/3-octave-band sound pressure level (SPL) tabulations for all of the test points.

## APPARATUS AND PROCEDURE

### OTW Experimental Propulsion System

The OTW experimental propulsion system, shown in figure 2, features a high-Mach-number (accelerating) inlet; a gear-driven fan; a composite fan frame; an acoustically treated fan duct with an acoustic splitter ring; a variable-geometry, D-shaped, confluent-flow exhaust nozzle (detailed in fig. 3); an advanced (F-101) core and low-pressure turbine; an acoustically treated core exhaust nozzle; top-mounted engine accessories; and a digital electronic control system.

The fundamental criterion that established the engine design approach was the fan engine cycle required to meet the noise objective. Acoustic design parameters are presented in table I. The fan and core exhaust pressure ratios were dictated by jet-flap noise constraints and by the powered-lift requirements of an OTW installation. Further details of the engine system design are given in references 3 and 4. Nominal conditions for the engine as tested are given in table II.

### Facility and Test Configurations

The configurations were run at the Engine Noise Test Facility of the NASA Lewis Research Center. A photograph and schematic of the engine and wing-flap on the test stand are shown in figure 4. Details of the facility capability are given in reference 6. Ten combinations of engine acoustic and wing-flap configurations were run during the tests. Test configuration details are tabulated in table III and shown schematically in figure 5.

The OTW used a Whitcomb supercritical airfoil design (fig. 6). The relative dimensions corresponded to the inboard engine mounting of a four-engine aircraft. The wing-flap system was tested with two flap-angle set-

tings: a  $34^\circ$  trailing-edge angle for  $30^\circ$  of flow turning at takeoff, and a  $74^\circ$  trailing-edge angle for  $60^\circ$  of flow turning at approach. The wing-flap length from the engine nozzle to the flap trailing edge, measured in multiples of the engine nozzle height, was 6.2 for the takeoff flap setting and 6.6 at approach. The span length of the wing segment was 7.1 engine nozzle heights. The acoustic treatment design details are presented in figure 7.

## INSTRUMENTATION AND ANALYTICAL PROCEDURES

### Microphone Systems

Two microphone systems were employed in the test program: a ground-plane system, and an overhead system. The 15 ground-plane microphones were positioned at  $10^\circ$  increments at selected locations on a 45.7-m (150-ft) radius arc (fig. 8). Microphones located within  $10^\circ$  or  $20^\circ$  of the deflected jet flow line during the engine and wing tests were severely buffeted and were moved to other locations outside the flow stream for these tests. The ground-plane microphones measured flyover noise data, simulating the case in which the aircraft flies directly over an observer on the ground. For a limited portion of the testing, three engine centerline microphones were mounted on poles at  $60^\circ$ ,  $90^\circ$ , and  $120^\circ$  from the engine inlet. These microphones were not used after some data comparisons indicated that the ground-plane microphones yielded more reliable (no ground reflection problems) indications of the flyover noise.

The flyover plane is shown in figure 9 as the plane AA'B'B. The angle  $\theta_F$  is measured from the flight path AA' to the line  $O_F P$ , defined by the position of the flyover observer at point  $O_F$  and the aircraft at point P. The QCSEE in-flight noise goals, however, are specified for a 152-m (500-ft) sideline flyby, as shown in figure 1. The sideline plane is the plane AA'C'C in figure 8. The angle  $\theta_S$  is measured in the sideline plane from AA' to the line  $O_S P$ , defined by the sideline observer at  $O_S$  and the aircraft at P. To obtain sideline noise data, five microphones were hung from a cable suspended from two towers, all lying in a plane  $90^\circ$  to the engine axis at the nozzle exit as shown in figure 8. The microphones were spaced to provide proper angles relative to a ground observer for an aircraft at altitudes of 0, 30.5, 61, 91.4, and 122 m (0, 100, 200, 300, and 400 ft; table IV). A sixth microphone was located to represent an observer at  $120^\circ$  from the engine inlet with the aircraft at 61 m (200 ft), the altitude of maximum sideline flyby noise.

Brüel and Kjaer 1.27-cm (0.5-in.) diameter condenser microphones equipped with windscreens were used. The ground-plane microphones were secured to 1.2- by 1.2-m (4- by 4-ft) hardboards, with microphones pointed nominally toward the noise source. The paved asphalt test area surface was painted white, except for the region within 15.2 m (50 ft) of the engine center, to minimize acoustic distortions due to convected heat waves rising from the black asphalt surface.

### Data Acquisition System

The data acquisition system utilized a minicomputer (to control the noise) and aerodynamic data scanners. Noise data from each microphone were analyzed on line by an automated 1/3-octave-band spectrum analyzer. Sound

pressure level spectra (referenced to  $2 \times 10^{-5}$  Pa) were determined for each microphone over the frequency range 25 to 16 kHz. The digitized noise data were transmitted to the computer. Each of three samples for a given corrected fan speed was reduced separately. The arithmetic average was then adjusted to standard-acoustic-day atmospheric conditions ( $77^{\circ}$  F, 70 percent relative humidity). The analog noise data were also recorded on FM tape for later off-line data reduction. Aerodynamic and environmental data were sampled periodically during the noise data acquisition scan and also transmitted to the computer. Data from the multiple aerodynamic and environmental scans were averaged and used by the computer in the calculation of engine operating parameters. At the conclusion of each test point, the noise data and calculated engine operating parameters were outputted on a line printer. Data stored in the computer were transmitted on command to the central data collector for storage and detailed analysis.

Perceived noise levels (PNL's) on a 152-m (500-ft) sideline flyby with the aircraft at different specified altitudes were calculated by using data from the overhead microphone system and the method of reference 10.

The measured ground-plane microphone data were corrected to free field by application of a -6 dB correction to each 1/3-octave-band SPL value. For the overhead microphones a nominal -2 dB free-field correction had been previously determined from both analytical and empirical studies. The ground reflection characteristics of each of the overhead microphones were unique, and a spectral correction for each was empirically determined and applied in cases where precise absolute values were desired or where comparisons between overhead microphones were to be made. The ground reflection correction is discussed in the next section.

#### GROUND REFLECTION CORRECTION FOR QCSEE OVERHEAD MICROPHONE SYSTEM

The overhead microphone array (table IV and fig. 8) is the key QCSEE acoustic measurement system since it provides the basic input for the calculation of QCSEE in-flight sideline noise levels. This overhead array was also useful in determining the noise asymmetry of the complete engine-nozzle-wing system. The QCSEE engine noise spectra also included very significant low-frequency noise contributions from the combustor, jet, and jet flap, with jet-flap noise peaking well below 50 Hz. Thus spectral distortion due to ground reflections for very low frequencies could not be ignored.

Initially a computer program of the analytical model of reference 11 was employed to correct the overhead microphone data for a variety of source distributions. This model assumed a perfectly reflecting ground plane. These calculations indicated that the net effect of the reflected signal would be an increase of 1.9 dB for the entire spectrum. However, for detailed spectral comparisons made in reference 6, data were available from tests with the UTW engine and thus an empirical correction could be made. This engine is axisymmetric with the possible exception of the four-flap, variable-exhaust nozzle and an inlet slip-ring strut, neither of which should have more than a slight effect on symmetry about the engine axis of rotation. Corrections derived from these data include complicated effects that might be due to the engine itself, to the engine test stand structure, or to the presence and location of peripheral support equipment (fig. 4).

The pertinent acoustic measurements during the engine-wing tests were made at five overhead locations in a plane perpendicular to the engine axis at  $90^{\circ}$  from the inlet ( $\theta_S = 90^{\circ}$ ) and also at  $90^{\circ}$  from the engine

inlet in the ground-plane array ( $\theta_F = 90^\circ$ ). In addition the  $120^\circ$ , 61-m (200-ft) overhead microphone and the  $120^\circ$  ground-plane microphone were important since the UTW engine was aft-noise dominated. A free-field spectrum was arrived at by subtracting 6 dB from the measured ground-plane SPL values over the entire spectrum. The spectral correction for each overhead ( $\theta_S = 90^\circ$ ) microphone was then obtained by subtracting each 1/3-octave-band SPL value from the corresponding free-field value obtained from the  $90^\circ$  ground-plane microphone, or from the  $120^\circ$  ground-plane microphone in the case of the  $120^\circ$ , 61-m (200-ft) overhead microphone.

From UTW engine-alone acoustic tests, six representative test points were selected in which engine power settings varied from approach to takeoff conditions and for which postcalibration tests indicated high-quality data for the overhead system and for the  $90^\circ$  ground-plane microphones. Correction values for the six overhead microphones that are given in table V are the arithmetic means of the corrections from the six test runs. These corrections are to be added to the tabulated values in table VIII. Also listed is the probable error of the mean values. The measured correction values above 1000 Hz for the 61- and 91.4-m (200- and 300-ft) altitude microphones are larger than the expected average correction of about -2 dB and may indicate the presence of additional reflection paths.

Tabulated corrections are given in table VI for PNL and OASPL for representative takeoff and approach power settings. As can be seen, the ground reflection corrections vary from -0.2 to -2.8 for OASPL and from 0 to -3.7 for PNL. These corrections are not incorporated in the data tables in this report.

#### NEAR-FIELD EFFECTS ON TOWER MICROPHONES

Although it is desirable to measure far-field acoustic data at a distance of some 50 source diameters, it is not always possible. Interpretation of acoustic data obtained for widely distributed sources in a limited test area where this criterion cannot be met requires some caution. In the engine-alone case the ground-plane microphones were 24 engine exhaust diameters (45.7 m, 150 ft) from the source. The overhead microphones at  $90^\circ$  from the engine were typically some 25.3 m (83 ft), or about 13 diameters, from the source; and the  $120^\circ$ , 61-m (200-ft) overhead microphone was about 17.7 m (58 ft), or only 9.3 diameters, from the source. However, in the powered-lift mode the high end of the trailing-edge flap was a principal noise source and was relatively close to the overhead microphones, with the  $120^\circ$ , 61-m (200-ft) microphone of the overhead system less than 12.8 m (42 ft) from the high end of the flap trailing edge. The edge was approximately 12.1 m (41.7 ft) from the engine inlet. Considering this inlet-to-flap-trailing-edge distance as the characteristic length of the powered-lift source, the overhead microphones were only one or two such lengths away.

Because it was impractical to locate all of the microphones in the far field, anechoic chamber tests were conducted on a 1/17 scale model of the QCSEE UTW<sup>1</sup> wing-flap configuration to determine corrections to the "far

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<sup>1</sup>Even though the tests were conducted with a model of the UTW wing, it was felt that the general geometry of the OTW engine-wing-flap system was similar and that therefore the general conclusions could be applied to the OTW case.



field" noise associated with "close in" measurement of jet-flap interaction noise. Data were obtained in the flyover plane at radiation angles  $\theta_F$  of  $90^\circ$  and  $120^\circ$  from the engine inlet (fig. 8). In addition, similar tests were run at radiation angles  $\theta_S$  of  $90^\circ$  and  $120^\circ$ , simulating the 61-m (200-ft) altitude sideline condition.

These tests indicated that very small corrections were required in the flyover-plane microphone data with either engine alone or with takeoff or approach flaps. Somewhat larger variations were measured for the sideline flyby microphone system. Small spectral corrections were determined for the low-frequency jet-flap noise portion of the  $\theta_S = 90^\circ$ , 61-m (200-ft) sideline microphone ( $\phi = 68.2^\circ$ ). These corrections amounted to an increase of 0.5 dB for the approach flap and 0.3 dB for the takeoff flap configuration and were within the normal accuracy ( $\pm 1$  dB) of the data. At  $\theta_S = 120^\circ$  and 61 m (200 ft) in the sideline plane ( $\phi = 68.2^\circ$ ), however, a very large increase of more than 7 PNdB was required for the jet-flap noise with approach flaps and about 5 PNdB with takeoff flaps.

The data tables in this report contain all of the data as recorded (uncorrected). The corrections presented herein are based on the author's considered judgment derived from experience with data analyses and the particular sound arena. It is recommended that the additive corrections be applied wherever detailed sound measurements are required, except for the microphone at  $\theta_S = 120^\circ$  and 61 m (200 ft) in the sideline plane ( $\phi = 68.2^\circ$ ) for wing-flap configurations because of the large magnitude of the corrections. The readings for this microphone should not be used in those instances.

## PRESENTATION OF DATA

The narrowband data plots and the 1/3-octave-band plots selected for presentation correspond to the parametric variables presented in table VII. All of the figures presented herein are representative takeoff and approach engine power levels for the engine alone and for the respective power level to match each wing-flap configuration, that is, approach power for the approach wing-flap configuration, and takeoff power for the takeoff wing-flap configuration. For the 30-Hz narrowband spectra, uncorrected noise data from two sideline-plane microphones and one flyover-plane microphone for each configuration are presented in figure 10. For the 1/3-octave-band spectra, 30.5-m (100-ft) radius lossless data from as many as four sideline-plane microphones and as many as five flyover-plane microphones are presented in figure 11. All of the data taken during the OTW program at Lewis are presented in tabular form in table VIII, which is included on microfiche at the end of this report.

## APPENDIX - SYMBOLS

$A_{18}$	exhaust nozzle area, $\text{cm}^2$ ( $\text{in}^2$ )
BPF	blade passing frequency, Hz
C	chord (fig. 6)
DISTANCE	distance measured from engine axis directly to microphone (fig. 8), m (ft)
F.S.	fully suppressed engine
FGK	gross thrust measurement corrected for ambient wind velocity and direction, N(lb)
FREQ.	frequency for 1/3-octave band, Hz
MIC	microphone number
OASPL	overall sound pressure level
PHI	angle from vertical flyover plane to a sideline (figs. 8 and 9)
R	radius measured from directly over engine to tower microphone (fig. 7), m (ft)
RAS	reduced aft suppression
SPL	sound pressure level, dB
THETA ( $\theta_S$ )	angle from flight path or engine centerline to observer in sideline plane (figs. 8 and 9), deg
THETA ( $\theta_F$ )	angle from flight path or engine centerline to observer in flyover plane (figs. 8 and 9), deg
XM11	average inlet throat Mach number
Z	vertical distance measured from ground to tower microphones (fig. 8), m (ft)
$\alpha$	flap trailing-edge angle (fig. 6)
$\beta_F$	fan blade angle measured from reference design angle, deg
$\gamma$	angle of flap tangent point from vertical reference (fig. 6)

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TABLE I. - ACOUSTIC DESIGN PARAMETERS FOR OTH ENGINE

[41.2-m/sec (80-knot) aircraft speed; 61-m (200-ft) altitude; takeoff conditions.]

Number of fan blades	28
Fan diameter, $D_F$ , cm (in.)	180.4 (71)
Fan pressure ratio	1.34
Fan speed, rpm	3738
Fan tip speed, m/sec (ft/sec)	350.5 (1150)
Number of outlet guide vanes	33 (32 + pylon)
Fan weight flow (corrected), kg/sec (lbm/sec)	405.5 (894)
Inlet Mach number (throat)	0.79
Rotor OGV spacing, rotor tip aerodynamic chords	1.93
Total exhaust area, $m^2$ ( $in^2$ )	1.802 (2794)
Gross thrust (sea-level static uninstalled), kN (lb)	93.4 (21 000)
Blade passing frequency, Hz	1744
Core exhaust flow, kg/sec (lbm/sec)	35.7 (78.6)
Fan exhaust velocity, m/sec (ft/sec)	219 (720)
Core exhaust velocity, m/sec (ft/sec)	328 (1077)
Bypass ratio	10.3
Ratio of inlet treatment length to fan diameter, $L_T/D_F$	0.74
Vane-blade ratio	1.18

TABLE II. - NOMINAL CONDITIONS (AS TESTED) FOR OTH ENGINE

Condition	Takeoff	Approach
Corrected fan speed, percent (nominal)	95	81
Total exhaust area, $m^2$ ( $in^2$ )	1.577 (2444)	1.901 (2947)
Corrected gross thrust (installed), kN (lb)	90.3 (20 300)	58.0 (13 042)
Inlet throat Mach number (one dimensional)	0.79	0.63
Fan pressure ratio	1.34	1.22
Bypass ratio	10.3	10.4
Fan exhaust velocity, m/sec (ft/sec)	219 (720)	180.4 (592)
Core exhaust velocity, m/sec (ft/sec)	328 (1077)	229.8 (754)

TABLE III. - QCSEE OTH ACOUSTIC TEST CONFIGURATION

Data tabulation subset	Test configuration	Inlet type	Inlet treatment type	Frame treatment?	Fan wall treatment?	Acoustic splitter?	Core treatment?	Wing-flap configuration	O-nozzle door angle, deg
10-12, 20-22, 1-8, 13-19	303	Hybrid	Bulk absorber	Yes	Yes	No (RAS)	No (RAS)	None	11.5
82-92	100	Bellmouth (constant area)	Hard	↓	Hard	No (RAS)	No (RAS)	Approach	25
53-59	103	Hybrid	Bulk absorber	↓	Yes	No (RAS)	No (RAS)	↓	35
23-32	112	Hybrid	Bulk absorber	↓	Yes	Yes	Yes	↓	↓
76-81	114	Hybrid	SDOF	↓	Yes	Yes	Yes	↓	↓
93-99	200	Bellmouth (constant area)	Hard	↓	Hard	No (RAS)	No (RAS)	Takeoff	↓
40-52	203	Hybrid	Bulk absorber	↓	Yes	No (RAS)	No (RAS)	↓	↓
33-39	212	Hybrid	Bulk absorber	↓	↓	Yes	Yes	↓	↓
66-75	214	Hybrid	SDOF	↓	↓	Yes	Yes	↓	↓
60-65	216	Bellmouth (constant area)	Hard	↓	↓	Yes	Yes	↓	↓

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TABLE IV. - OVERHEAD (SIDELINE PLANE) MICROPHONE PLACEMENT

Sideline angle, <sup>a</sup> $\theta_s$ , deg	Altitude		Distance <sup>a</sup>		Ground plane radius, <sup>a</sup> R		Height above ground plane, <sup>a</sup> Z		Angle from vertical flyover plane to microphone, <sup>a</sup> $\psi$ , deg
	m	ft	m	ft	m	ft	m	ft	
90	0	0	6	90.6	0	0	32.3	106	0
90	30.5	100	25.2	84.6	5.2	17	29.9	98	11
90	61	200	24.9	81.8	9.4	31	27.7	91	22
90	91.4	300	25.2	82.6	13.1	43	26.2	86	31
90	122	400	26.1	85.6	16.5	54	24.7	81	39
120	61	200	17.7	58.1	10.4	34	19.2	63	35

<sup>a</sup>See fig. 8.

TABLE V. - MEASURED TEST AREA REFLECTIVITY CORRECTIONS  
FOR QCSEE OVERHEAD MICROPHONE SYSTEM

Frequency, Hz	Sideline angle, $\theta_s$ , deg											
	90										120	
	Altitude, m (ft)											
	0	30.5 (100)	61.0 (200)	91.4 (300)	121.9 (400)	61.0 (200)						
	Corrections to be added to measured values (table VII)											
	$\Delta$ dB	PE <sup>3</sup>	$\Delta$ dB	PE	$\Delta$ dB	PE	$\Delta$ dB	PE	$\Delta$ dB	PE	$\Delta$ dB	PE
25	-2.1	0.7	-0.9	0.6	1.3	0.3	-0.7	0.3	-1.2	0.4	0.3	1.7
31.5	-2.1	.2	-1.2	.4	.5	.2	-1.5	.2	-1.9	.6	-0.3	1.1
40	-1.3	.3	-.6	.5	.7	.5	-.3	.4	-.8	.4	-0.2	1.3
50	-1.2	.4	-1.3	.5	.6	.4	.3	.4	-.9	.3	-0.3	0.9
63	-0.9	.2	-1.1	.4	-.2	.5	-.7	.4	-3.0	.4	-1.4	0.8
80	-0.9	0.3	-0.9	0.5	-0.5	0.4	-0.6	0.2	-1.8	0.3	-0.5	0.6
100	.5	.4	-.1	.4	-.0	.4	-.6	.3	-1.0	.2	-1.2	0.8
125	-.4	.2	-1.0		-.6	.3	-1.3	.3	-1.5	.2	-0.2	0.7
160	.5	.4	-.4		-.6	.3	-1.0	.4	-2.2	.3	-1.0	0.6
200	1.7	.4	1.0		.9	.4	.3	.5	.0	.4	-1.7	0.9
250	-0.5	0.2	-0.5	0.3	-1.5	0.4	-1.6	0.3	-2.2	0.4	-0.3	0.3
315	-.4	.2	-.5	.1	-1.7	.3	-1.8	.3	-2.6		0.0	1.1
400	.6	.1	-.1	.1	-2.0	.2	-1.8	.2	-2.6		0.5	0.6
500	-1.7	.2	-1.5	.2	-2.7	.1	-3.3	.3	-3.9		1.1	1.1
630	-.9	.1	.2	.2	-1.2	.1	-2.0	.2	-2.4	.1	0.4	0.8
800	0.9	0.2	0.1	0.2	-1.0	0.2	-1.1	0.2	-2.3	0.3	-0.6	1.3
1 000	-.7	.4	-.7	.5	-2.4	.4	-3.2	.4	-3.3	.5	-0.4	1.1
1 250	.6	.2	-.1	.1	-1.5	.2	-2.3	.1	-3.1	.2	-0.1	0.6
1 600	-1.4	.3	-2.0	.2	-2.9	.2	-3.5	.2	-4.0	.2	-1.0	0.7
2 000	-1.8	.2	-2.7	.2	-3.9	.3	-4.4	.3	-4.9	.4	-0.3	0.9
2 500	-2.2	0.2	-2.8	0.2	-3.3	0.3	-4.6	0.4	-4.8	0.3	-0.6	1.1
3 150	-1.3		-2.6	.2	-2.7	.2	-4.0	.3	-4.6	.3	0.1	0.5
4 000	-.8		-1.9	.3	-1.8	.2	-3.8	.3	-4.3	.4	0.6	0.2
5 000	-1.3		-3.0	.1	-1.9	.1	-4.2	.2	-4.6	.1	0.6	0.9
6 300	-1.2		-3.4	.2	-1.6	.2	-4.9	.2	-4.6	.2	1.4	0.5
8 000	-0.8	0.2	-3.8	0.2	-1.3	0.2	-5.5	0.1	-4.9	0.2	1.1	0.5
10 000	-.4	.1	-4.3	.1	-.3	.2	-5.7	.1	-5.5	.1	0.4	0.4

<sup>a</sup>Probable error.



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TABLE VI. - EFFECT OF GROUND REFLECTION CORRECTION ON MEASURED  
OASPL AND PNL OVER A RANGE OF POWERS FROM APPROACH  
TO TAKEOFF POWER

[Corrections are to be added to measured values (table VII).]

Sideline angle, $\theta_s$ , deg	Simulated altitude of overhead microphone system		Correction in OASPL, dB	Correction in PNL, dB
	m	ft		
90	0	0	-0.2	-0.9
90	30.0	100	-1.1	-1.8
90	61.0	200	-1.3	-2.0
90	91.4	300	-2.2	-3.3
90	121.9	400	-2.8	-3.7
120	61.0	200	+2	0

TABLE VII. - CONDITIONS FOR NARROWBAND AND 1/3-OCTAVE-BAND PLOTS

Data tabula- tion subset	Test config- uration	Suppression <sup>a</sup>	Wing- flap configur- ation	Fan speed, percent of design	D-nozzle door angle, deg	Narrowband plots	1/3-Octave- band plots
						Figure	
12	300	RAS	---	95	11.5	9(a), (h), (e)	10(i), (b)
22	300	RAS	---	81	11.5	9(d), (e), (f)	10(c), (d)
6	300	RAS	---	95	25	9(g)	10(e)
3	300	RAS	---	81	25	9(h)	10(f)
37	212	F.S.	Takeoff	95	35	9(i), (j), (k)	10(g), (h)
25	112	F.S.	Approach	81	35	9(l), (m), (n)	10(i), (j)
47	203	RAS	Takeoff	95	35	9(o), (p), (q)	10(k), (l)
54	103	RAS	Approach	81	35	9(r), (s), (t)	10(m), (n)

<sup>a</sup>F.S. denotes fully suppressed engine; RAS denotes reduced aft suppression.

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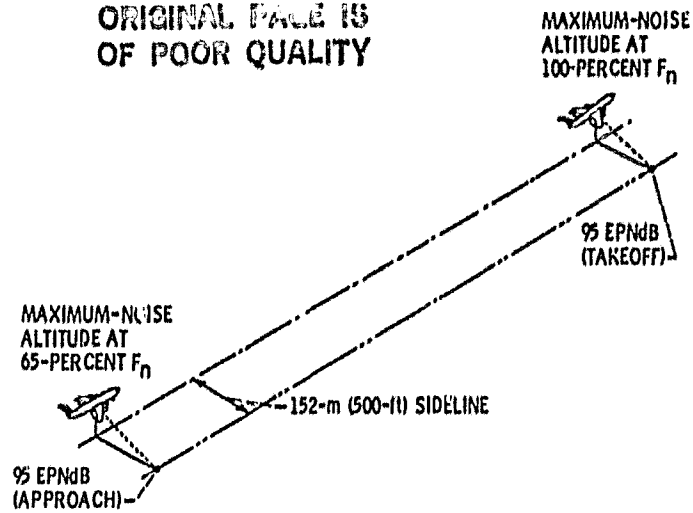


Figure 1. - QCSEE in-flight noise goals. Number of engines, 4; installed thrust,  $F_n$ , 400 kN (90 000 lb); runway length, 610 m (2000 ft).

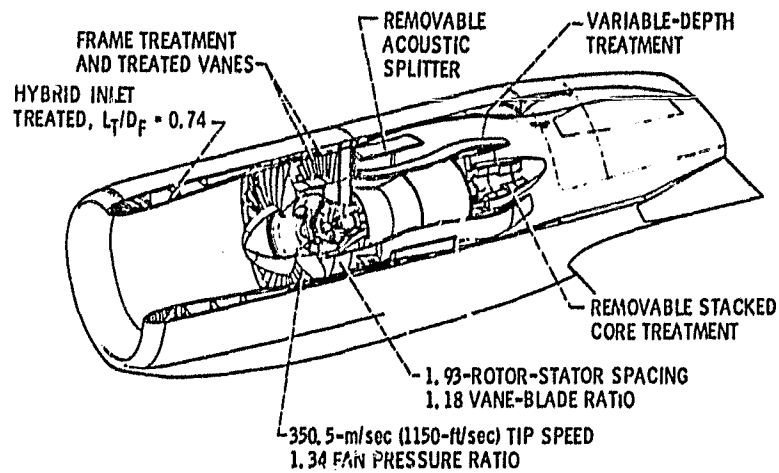


Figure 2. - Acoustic design features of OTW engine.

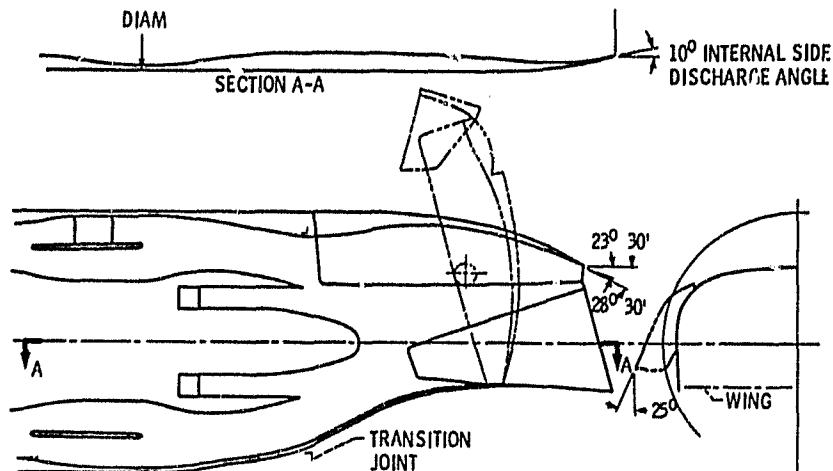
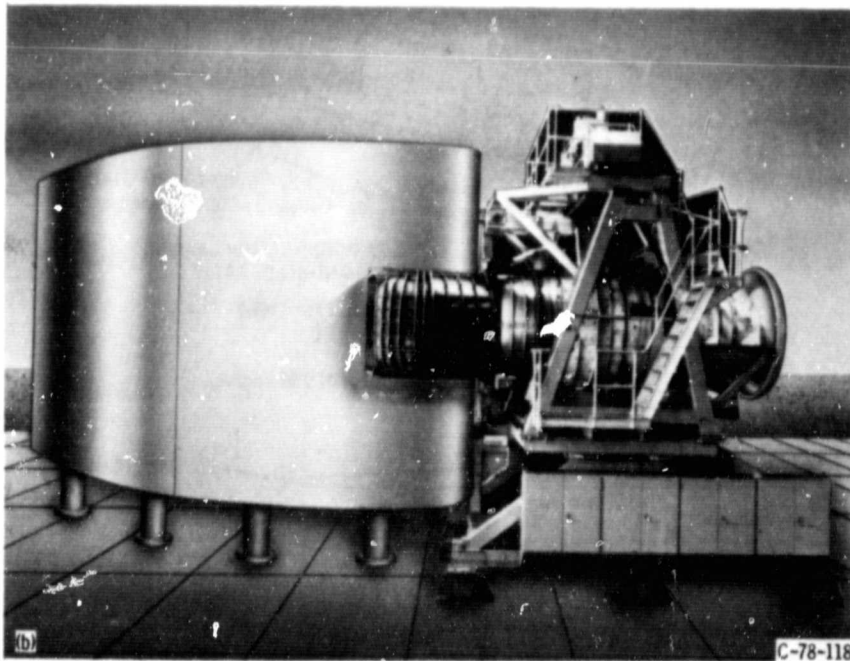
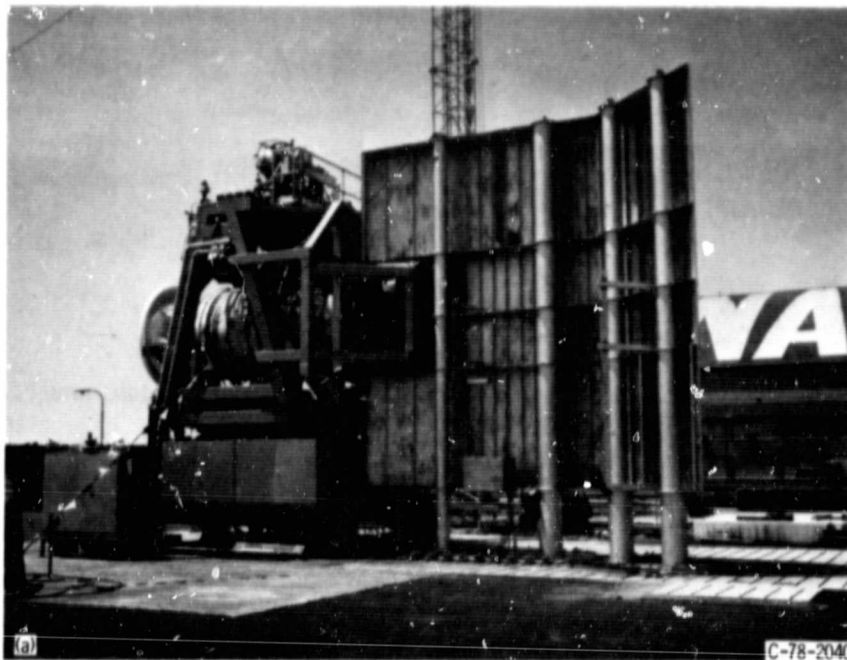


Figure 3. - D-shaped confluent exhaust nozzle.

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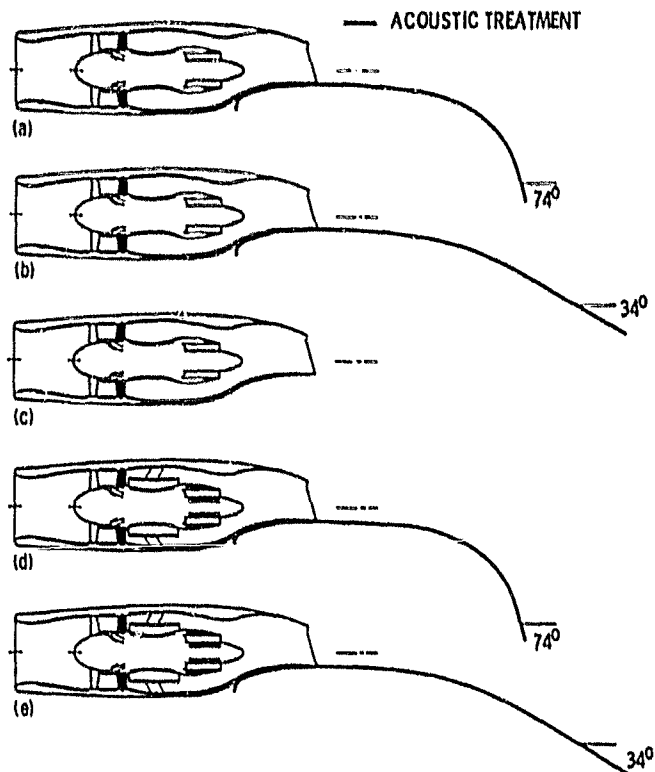


(a) QCSEE OTW engine and wing at Engine Noise Facility.

(b) Illustration of installation at Engine Noise Facility showing D-nozzle position on surface of wing.

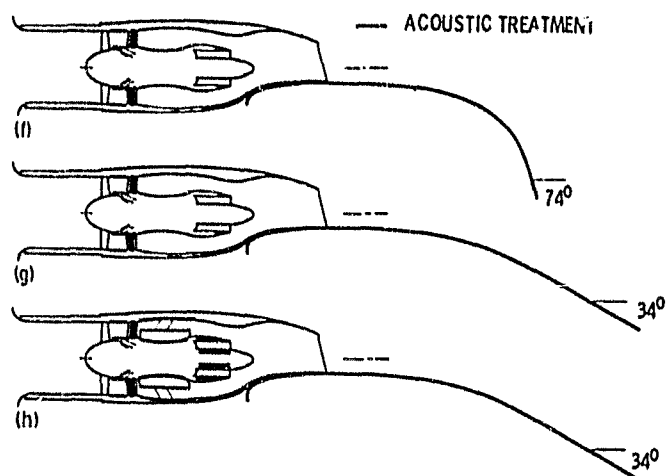
Figure 4. - QCSEE OTW engine and wing installation.

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- (a) Configuration 103 (partially suppressed engine with approach flaps).
- (b) Configuration 203 (partially suppressed engine with takeoff flaps).
- (c) Configuration 300 (partially suppressed engine alone).
- (d) Configuration 114 (fully suppressed engine with approach flaps);  
configuration 112 (fully suppressed engine with bulk absorber inlet treatment).
- (e) Configuration 214 (fully suppressed engine with takeoff flaps);  
configuration 212 (fully suppressed engine with bulk absorber inlet treatment).

Figure 5. - OTW test configurations.



- (f) Configuration 100 (unsuppressed engine with approach flaps and untreated bellmouth inlet).
- (g) Configuration 200 (unsuppressed engine with takeoff flaps and untreated bellmouth inlet).
- (h) Configuration 216 (fully suppressed engine with takeoff flaps and untreated bellmouth inlet).

Figure 5. - Concluded.



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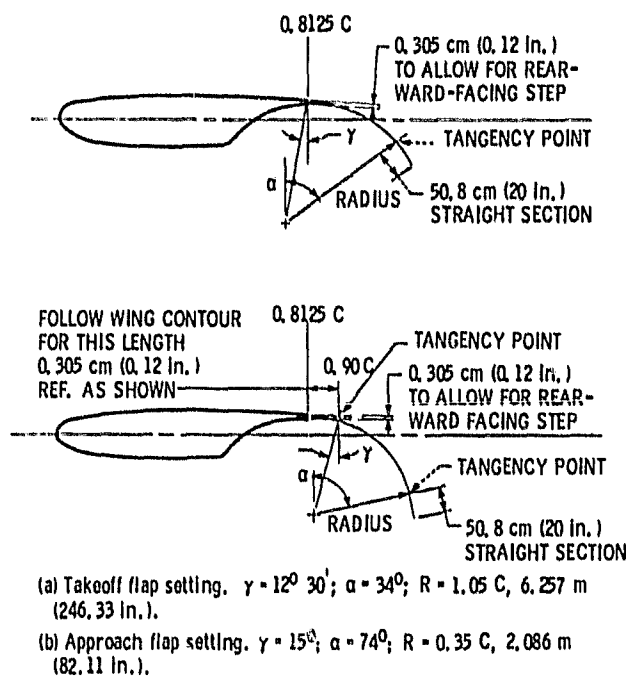
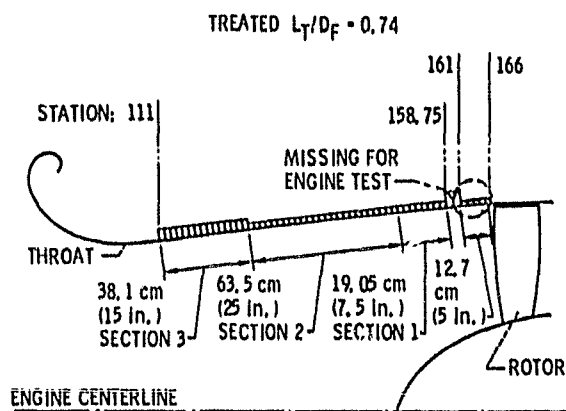


Figure 6. - OTW wing-flap design.

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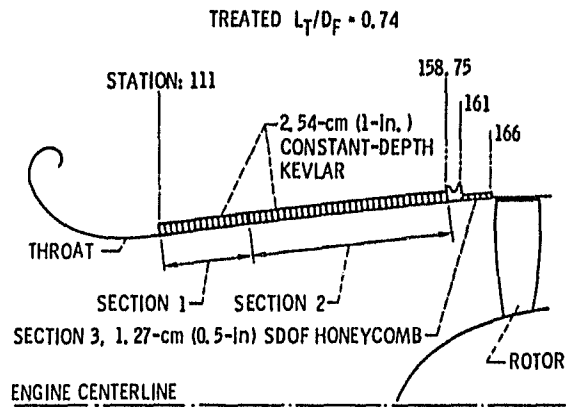
SECTION	HOLE SIZE		POROSITY, percent	CAVITY DEPTH		FACEPLATE THICKNESS	
	cm	in.		cm	in.	cm	in.
1	0.1589	0.0625	9.89	1.27	0.50	0.0813	0.032
2	.1589	.0625	9.89	1.91	.75	.0813	.032
3	.1589	.0625	9.89	3.82	1.50	.0813	.032

SECTION	DESIGN FREQUENCIES	
	REVERSE THRUST, Hz	FORWARD THRUST, Hz
1	3150	2000
2	2500	1600
3	1600	1000

(a) Inlet treatment.

Figure 7. - Acoustic design details.

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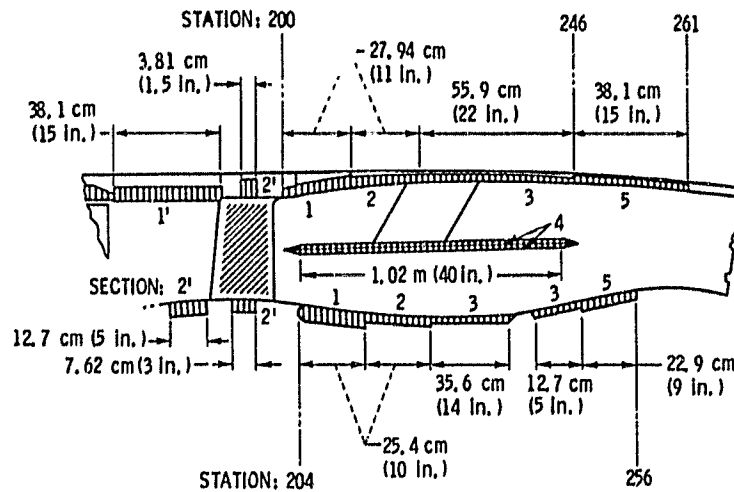


SECTION	LENGTH		FACEPLATE THICKNESS		POROSITY percent	HOLE SIZE		TUNING FREQUENCY Hz
	cm	in.	cm	in.		cm	in.	
1	38.10	15	0.127	0.050	14	0.159	0.0625	1600
2	82.55	32.5	.127	.050	22	.159	.0625	1600
3	12.7	5	.0813	.032	10	.159	.0625	2000

(b) Bulk absorber inlet treatment.

Figure 7. - Continued.

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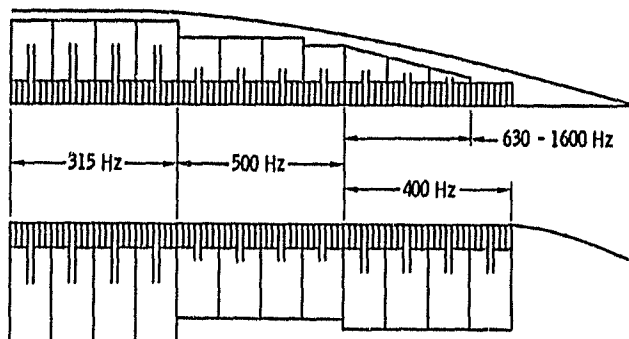


	DEPTH		POROSITY, percent	TUNING FREQUENCY, Hz
	cm	in.		
FAN FRAME TREATMENT				
SECTION 1'	1. 90	0. 75	10	1600
SECTION 2'	5. 08	2	10	1000
TREATED VANES	. 76	0. 3	10	4000
FAN EXHAUST TREATMENT				
SECTION 1	5. 08	2	22	1250
SECTION 2	2. 54	1	15	2000
SECTION 3	1. 90	. 75	15	2500
SECTION 4	1. 27	. 5	11. 5	2500
SECTION 5	2. 54	1	15. 5	1600

(c) Treatment for fan exhaust duct showing removable acoustic splitter.

Figure 7. - Continued.

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	COMBUSTOR						TURBINE
	INNER WALL			OUTER WALL			BOTH WALLS
TUNING FREQUENCY, Hz	315	400	500	315	500	630 - 1600	3150
NECK LENGTH (FACEPLATE THICKNESS), cm (in.)	6.99 (2.75)	5.72 (2.25)	4.45 (1.75)	6.99 (2.75)	4.45 (1.75)	3.56 - 2.54 (1.4 - 1.0)	0.08128 (0.032)
CAVITY DEPTH, cm (in.)	10.2 (4.0)	8.89 (3.5)	7.62 (3.0)	7.62 (3.0)	4.32 & 5.08 (1.7 & 2.0)	4.06 - 0.51 (1.6 - 0.2)	1.905 (0.75)
POROSITY, %	10	10	10	7	7	7	10
TREATMENT LENGTH, cm (in.)	20.32 (8.0)	20.32 (8.0)	20.32 (8.0)	20.32 (8.0)	15.24 & 5.08 (6.0 & 2.0)	20.32 (8.0)	60.96 (24.0)
HOLE DIAMETER, cm (in.)	1.52 (0.6)	1.52 (0.6)	1.52 (0.6)	1.52 (0.6)	1.52 (0.6)	1.52 (0.6)	0.1575 (0.062)

(d) Treatment for core exhaust.

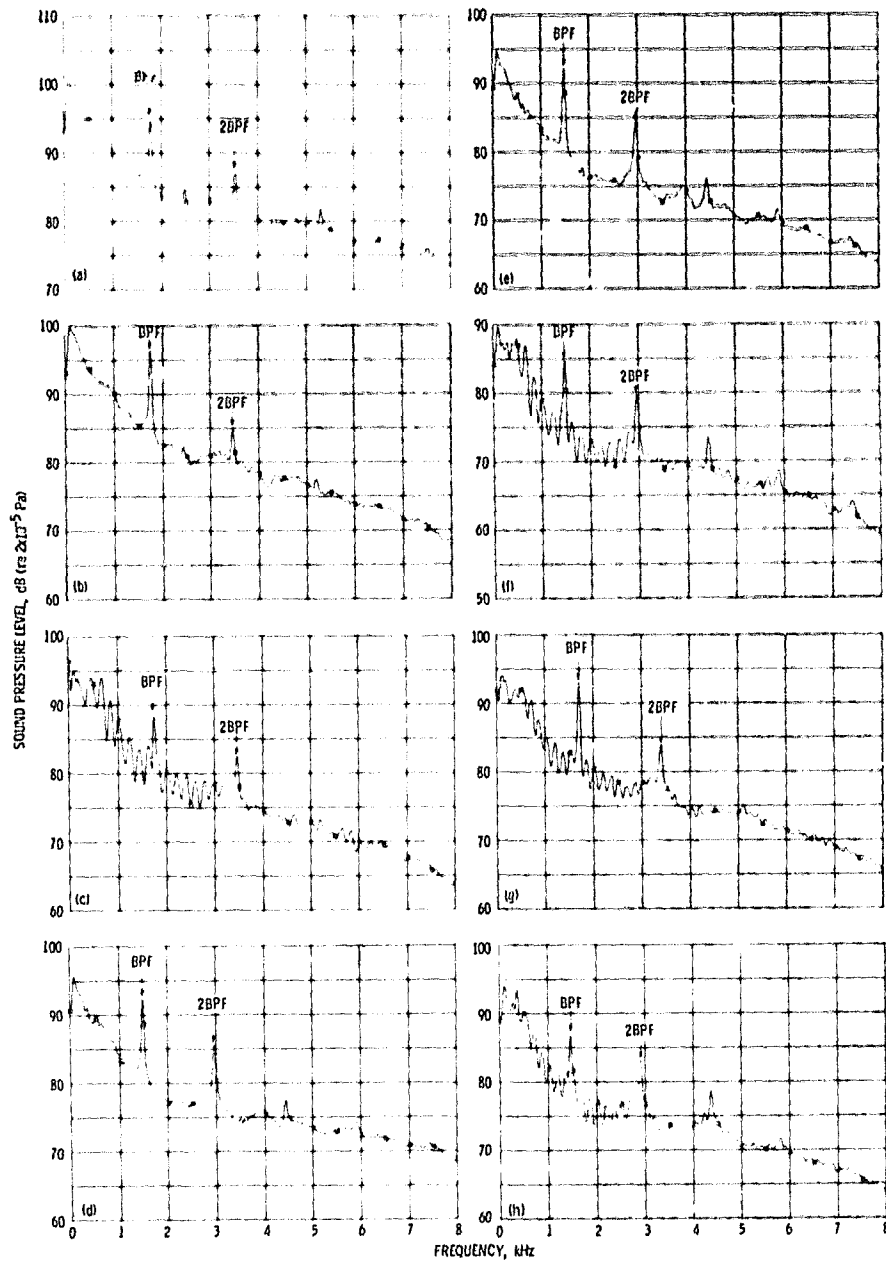
Figure 7. - Concluded.



The diagram illustrates the microphone layout for engine flyby measurements. It shows a vertical centerline with microphones at 30.5 m (100 ft), 61 m (200 ft), 91.4 m (300 ft), and 122 m (400 ft). A horizontal line represents the engine flyby path, with microphones at 45.5 m (150 ft) and 122 m (400 ft). The diagram also shows the engine centerline microphones and the flyover-plane ground microphones. The flyover-plane ground microphones are taped to 1.2- by 1.2-m (4- by 4-ft) hardboard panels oriented toward the engine. The diagram includes angles of 30°, 60°, 90°, 120°, and 150° for the flyover-plane ground microphones. The engine centerline microphones are at 30°, 60°, 90°, and 120°. The flyover-plane ground microphones are at 30°, 60°, 90°, 120°, and 150°. The diagram also shows the engine centerline microphones and the flyover-plane ground microphones. The engine centerline microphones are at 30°, 60°, 90°, and 120°. The flyover-plane ground microphones are at 30°, 60°, 90°, 120°, and 150°. The diagram includes the text 'FLYOVER-PLANE GROUND MICROPHONES TAPED TO 1.2- BY 1.2-m (4- BY 4-ft) HARDBOARD PANELS ORIENTED TOWARD ENGINE' and 'CD-12095-07'.

**Figure 9. - Flyover and sideline flyby geometry.**

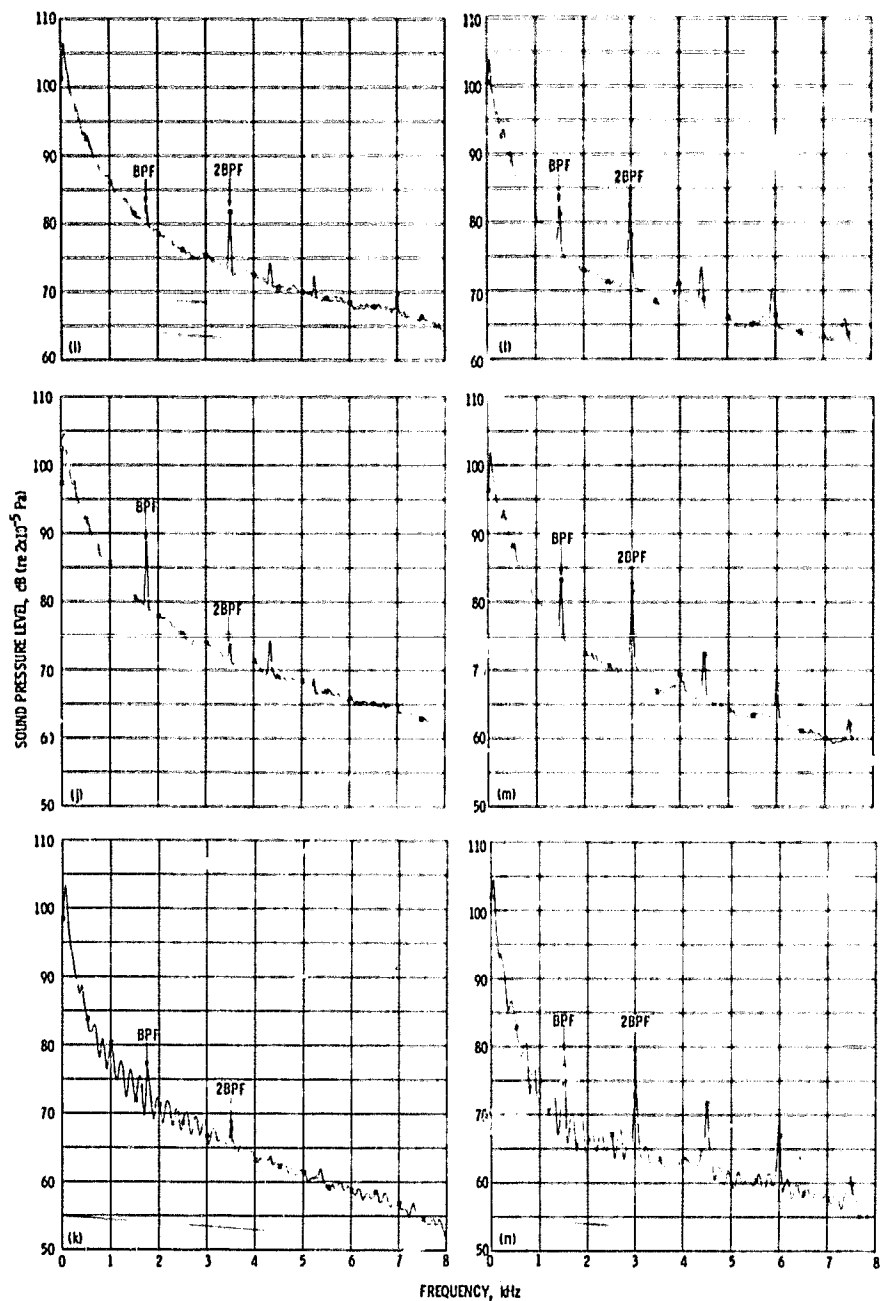
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- (a) Engine alone; takeoff power; 11.5° door position; microphone 90° from engine inlet in sideline plane at  $\phi = 31^\circ$  (91.4-m altitude on 152.4-m sideline).
- (b) Engine alone; takeoff power; 11.5° door position; microphone 90° from engine inlet in sideline plane at  $\phi = 22^\circ$  (61-m altitude on 152.4-m sideline).
- (c) Engine alone; takeoff power; 11.5° door position; microphone 90° from engine inlet in flyover plane.
- (d) Engine alone; approach power; 11.5° door position; microphone 90° from engine inlet in sideline plane at  $\phi = 31^\circ$  (91.4-m altitude on 152.4-m sideline).
- (e) Engine alone; approach power; 11.5° door position; microphone 90° from engine inlet in sideline plane at  $\phi = 22^\circ$  (61-m altitude on 152.4-m sideline).
- (f) Engine alone; approach power; 11.5° door position; microphone 90° from engine inlet in flyover plane.
- (g) Engine alone; takeoff power; 25° door position; microphone 90° from engine inlet in flyover plane. (No sideline-plane microphone installed for this run.)
- (h) Engine alone; approach power; 25° door position; microphone 90° from engine inlet in flyover plane. (No sideline-plane microphone installed for this run.)

Figure 10. - Narrowband spectra; filter bandwidth, 30 Hz.

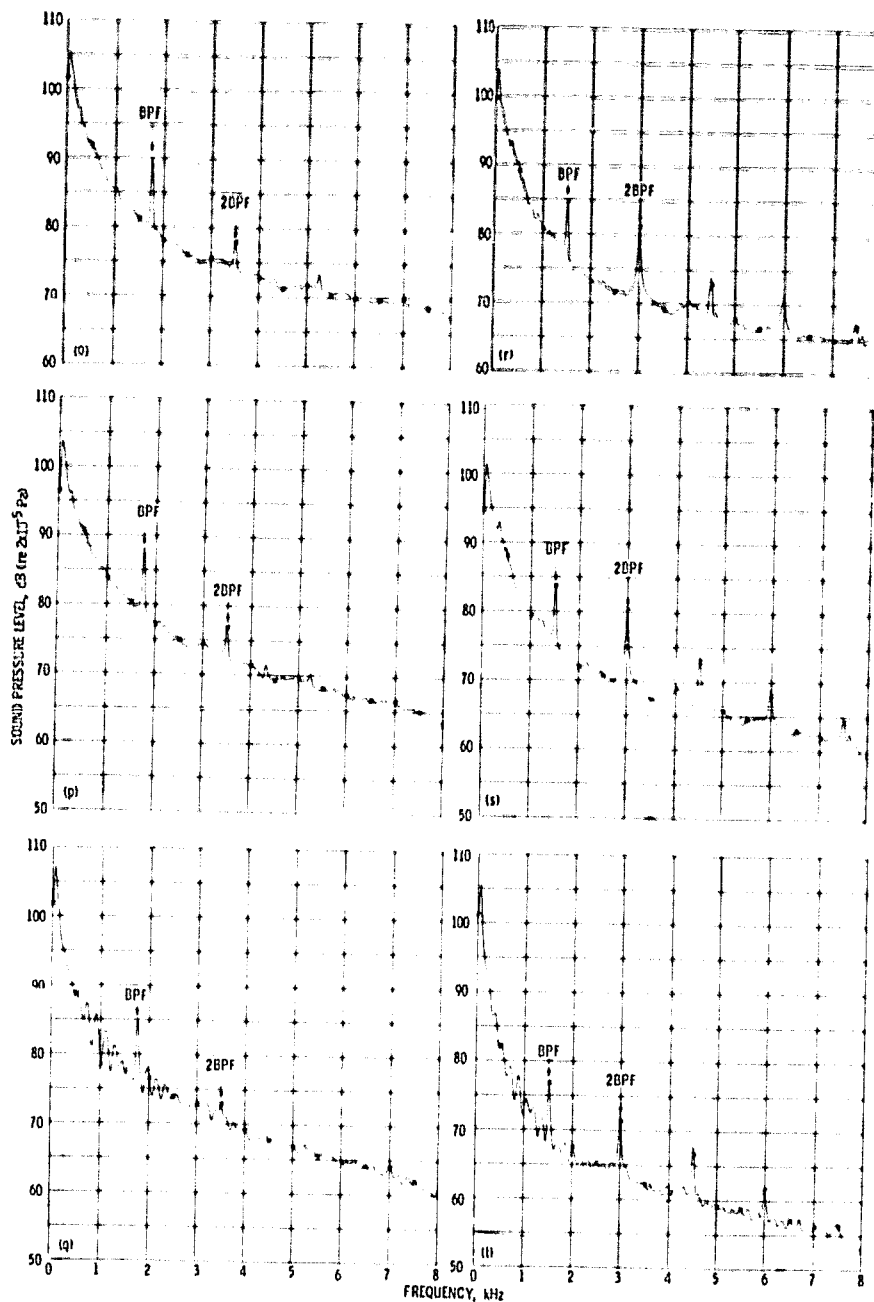
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- (i) Fully suppressed engine with wing and takeoff flap; takeoff power; microphone  $90^\circ$  from engine inlet in sideline plane at  $\varphi = 31^\circ$  (91.4-m altitude on 152.4-m sideline).
- (j) Fully suppressed engine with wing and takeoff flap; takeoff power; microphone  $90^\circ$  from engine inlet in sideline plane at  $\varphi = 22^\circ$  (61-m altitude on 152.4-m sideline).
- (k) Fully suppressed engine with wing and takeoff flap; takeoff power; microphone  $50^\circ$  from engine inlet in flyover plane.
- (l) Fully suppressed engine with wing and approach flap; approach power; microphone  $90^\circ$  from engine inlet in sideline plane at  $\varphi = 31^\circ$  (91.4-m altitude on 152.4-m sideline).
- (m) Fully suppressed engine with wing and approach flap; approach power; microphone  $90^\circ$  from engine inlet in sideline plane at  $\varphi = 22^\circ$  (61-m altitude on 152.4-m sideline).
- (n) Fully suppressed engine with wing and approach flap; approach power; microphone  $90^\circ$  from engine inlet in flyover plane.

Figure 10. - Continued.

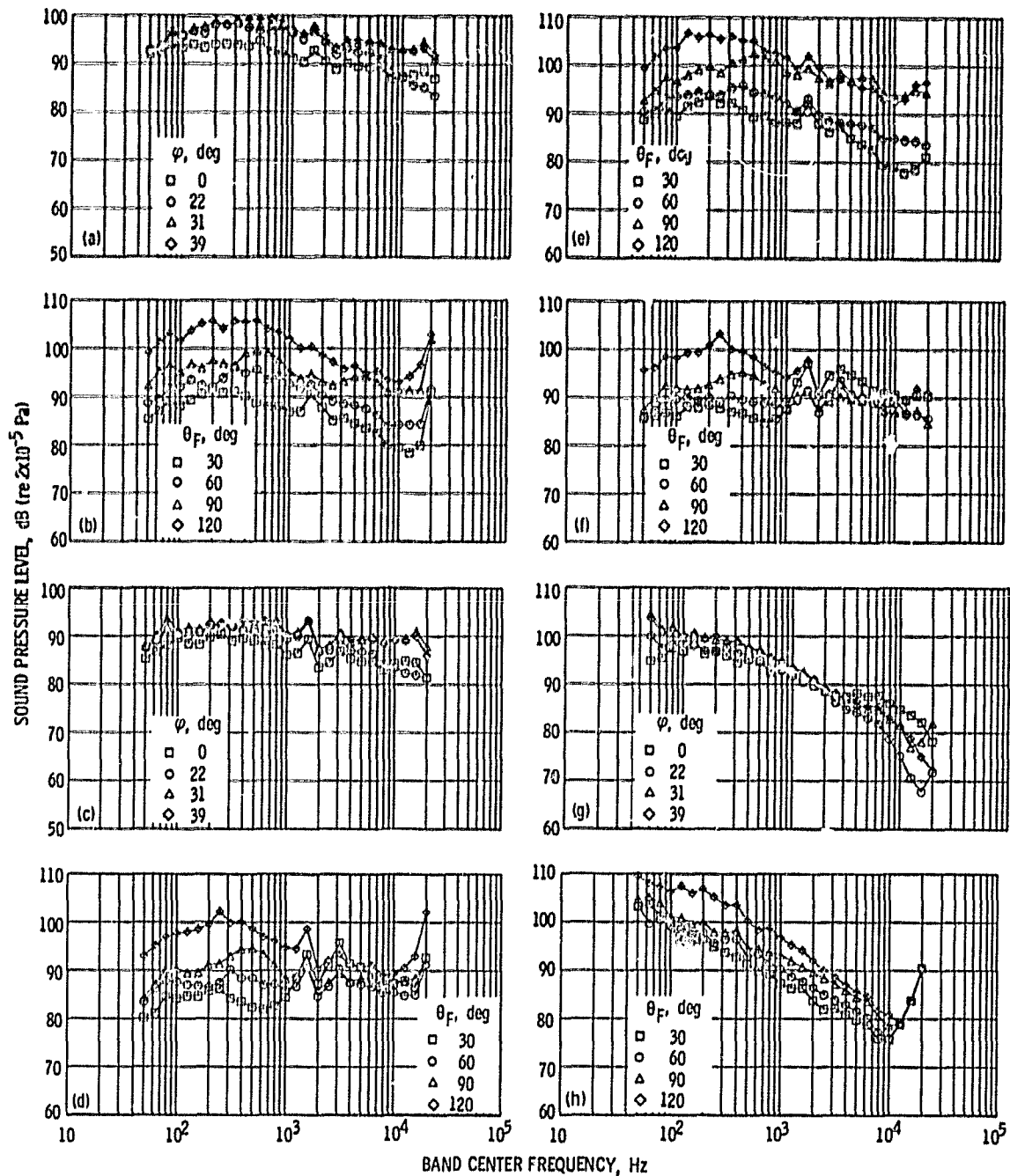
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- (a) Engine with wing and takeoff flap; takeoff power; microphone  $90^\circ$  from engine inlet in sideline plane at  $\phi = 31^\circ$  (91.4-m altitude on 152.4-m sideline).
- (p) Engine with wing and takeoff flap; takeoff power; microphone  $90^\circ$  from engine inlet in sideline plane at  $\phi = 22^\circ$  (61-m altitude on 152.4-m sideline).
- (q) Engine with wing and takeoff flap; takeoff power; microphone  $90^\circ$  from engine inlet in flyover plane.
- (r) Engine with wing and approach flap; approach power; microphone  $90^\circ$  from engine inlet in sideline plane at  $\phi = 31^\circ$  (91.4-m altitude on 152.4-m sideline).
- (s) Engine with wing and approach flap; approach power; microphone  $90^\circ$  from engine inlet in sideline plane at  $\phi = 22^\circ$  (61-m altitude on 152.4-m sideline).
- (t) Engine with wing and approach flap; approach power; microphone  $90^\circ$  from engine inlet in flyover plane.

Figure 10. - Concluded.

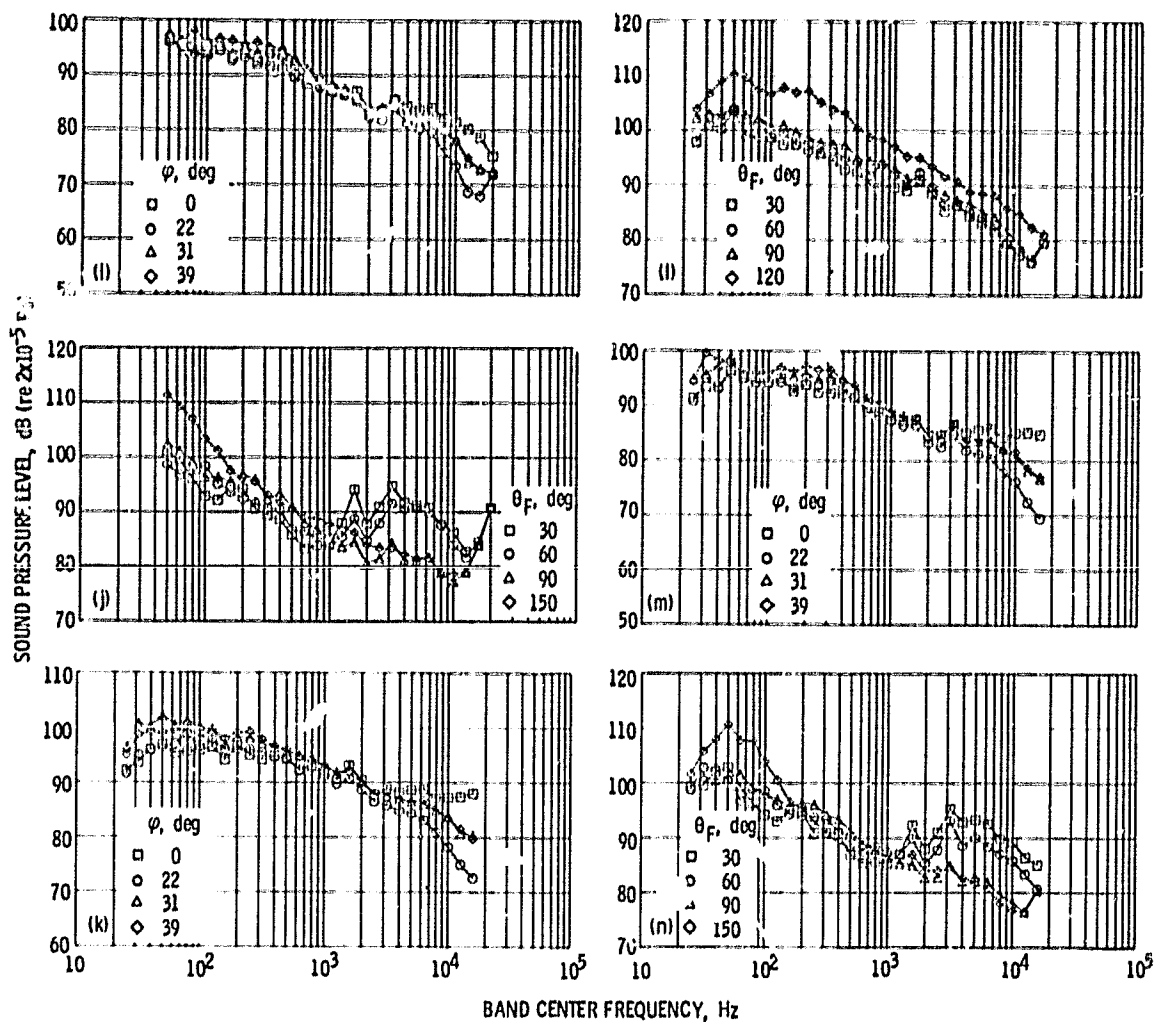
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- (a) Engine alone; takeoff power; sideline-plane microphone;  $11.5^\circ$  door position.  
 (b) Engine alone; takeoff power; flyover-plane microphones;  $11.5^\circ$  door position.  
 (c) Engine alone; approach power; sideline-plane microphones;  $11.5^\circ$  door position.  
 (d) Engine alone; approach power; flyover-plane microphones;  $11.5^\circ$  door position.  
 (e) Engine alone; takeoff power; flyover-plane microphones;  $25^\circ$  door position.  
 (f) Engine alone; approach power; flyover-plane microphones;  $25^\circ$  door position.  
 (g) Fully suppressed engine with wing and takeoff flap; takeoff power; sideline-plane microphone.  
 (h) Fully suppressed engine with wing and takeoff flap; takeoff power; flyover-plane microphone.

Figure 11. - 1/3-Octave-band spectra. Lossless data at 30.5 m (100 ft).

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- (i) Fully suppressed engine with wing and approach flap; approach power; sideline-plane microphones.  
 (j) Fully suppressed engine with wing and approach flap; approach power; flyover-plane microphones.  
 (k) Engine with wing and takeoff flap; takeoff power; sideline-plane microphones.  
 (l) Engine with wing and takeoff flap; takeoff power; flyover-plane microphones.  
 (m) Engine with wing and approach flap; approach power; sideline-plane microphones.  
 (n) Engine with wing and approach flap; approach power; flyover-plane microphones.

Figure 11. - Concluded.

## TABLE VIII -OTW DATA TABULATION

DATA OF 417. SUBSET NO. 1. READINGS 2 3 4

SIX DECIBELS HAVE BEEN SUBTRACTED FROM THE ORIGINAL DATA.  
 CCSEE OTW ENGINE TEST  
 BULK ABSORBER INLET  
 3000 FT. RUNWAY CONF.  
 ENGINE ALONE TEST

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SPL LOSSLESS ARRAY

FLYOVER PLANE DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERIC  
 (FOR POWER AND DIRECTIVITY COMPUTATION)

ANGLE,  $\theta$  30. 60. 80. 90. 100. 120.  
 COMPUTED DASPL 96.3 91.9 93.4 94.3 96.1 98.5

## BAND FREQUENCY

1	50	77.3	73.7	77.3	77.7	78.2	81.0
2	63	79.8	78.2	83.5	83.3	83.7	88.0
3	80	77.0	78.7	84.7	83.2	85.7	87.7
4	100	79.2	74.7	82.2	81.3	83.7	85.0
5	125	79.2	77.0	78.4	80.4	79.5	84.0
6	160	76.2	76.9	78.2	77.5	79.0	82.2
7	200	75.9	81.2	80.0	80.9	81.0	85.7
8	250	77.2	74.2	76.7	77.9	80.5	87.9
9	315	75.6	75.2	78.6	78.7	81.4	83.2
10	400	73.6	76.4	77.1	78.7	82.6	82.9
11	500	72.9	76.1	78.6	79.9	81.4	80.9
12	630	75.1	76.1	79.9	79.9	80.1	81.6
13	800	89.1	83.1	82.8	83.8	84.3	89.3
14	1000	83.7	77.7	79.7	80.8	81.8	85.8
15	1250	80.1	74.6	78.6	80.7	81.2	81.9
16	1600	84.5	77.1	76.1	78.3	79.8	81.0
17	2000	80.5	73.1	73.1	75.1	77.1	79.3
18	2500	83.4	74.2	74.2	76.0	77.5	79.8
19	3150	80.8	72.2	73.2	75.4	77.4	78.5
20	4000	79.9	73.9	73.4	76.1	77.4	77.9
21	5000	79.6	73.9	75.3	77.1	79.0	79.3
22	6300	85.1	78.1	78.2	80.5	83.0	83.3
23	8000	88.7	81.5	76.5	77.8	80.0	80.7
24	10000	81.1	80.7	77.0	77.9	80.2	80.5
25	12500	78.3	77.8	81.4	84.7	87.4	87.2
26	16000	81.9	76.4	75.3	78.3	82.9	85.7
27	20000	80.7	77.4	73.7	75.3	79.2	81.1

AVERAGED PREDATA DATE = 417. RUN NUMBER = 17. RPM = 1822.

CONFIGURATION NUMBER = 300. PERCENT SPEED = 50

RELATIVE HUMIDITY = 70. BAROMETER = 29.45

FOLDOUT FRAME 1

FGK - 4616  
 XM11 0.282

TABLE VIII - OTW DATA TABULATION

3 4

ED FROM THE ORIGINAL DATA.

CONFIGURATION NO 300  
SPEED = 1822. RPM  
PERCENT SPEED = 50.0

LOSSLESS ARRAY

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9 FT RADIUS WITH NO ATMOSPHERIC ATTENUATION  
POWER AND DIRECTIVITY COMPUTATIONS)

5  
0  
0  
7  
0  
0  
2  
7  
9  
2  
9  
9  
6  
3  
8  
9  
0  
3  
8  
5  
9  
3  
3  
7  
5  
2  
7  
1

= 17. RPM = 1822.  
300. PERCENT SPEED = 50. TEMPERATURE = 45.  
BARGMETER = 29.45 25° DOOR

FOLDOUT FRAME 2



DATA OF 417. SUBSET NO. 2. READINGS 5 6 7

SIX DECIBELS HAVE BEEN SUBTRACTED FROM THE ORIGINAL DATA.  
QCSFE OTW ENGINE TEST  
BULK ABSORBER INLET  
3000 FT. RUNWAY CCNF.  
ENGINE ALONE TEST

SPL LOSSLESS ARRAY

FLYOVER PLANE DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERIC  
(FOR POWER AND DIRECTIVITY COMPUTATION)

ANGLE,  $\theta$ , 30. 60. 80. 90. 100. 120.

COMPUTED DASPL 101.4 97.8 99.4 100.0 102.7 105.4

BAND FREQUENCY

1	50	80.2	80.0	83.2	83.3	87.0	87.7
2	63	81.3	82.0	84.2	84.2	88.7	90.3
3	80	86.2	84.3	88.7	89.7	91.8	94.2
4	100	87.5	86.0	87.8	88.8	92.0	93.0
5	125	84.5	85.4	85.4	85.4	88.9	93.2
6	160	82.4	82.0	85.5	84.7	87.7	91.9
7	200	86.5	84.5	86.7	87.2	88.9	95.7
8	250	84.2	84.2	86.0	85.9	88.4	97.9
9	315	81.7	83.4	88.4	88.9	91.2	93.4
10	400	80.6	83.6	85.9	88.6	92.1	92.9
11	500	79.6	82.8	88.1	87.1	89.6	89.8
12	630	78.8	81.9	86.8	86.4	87.6	87.9
13	800	81.3	81.8	85.8	86.1	87.3	89.5
14	1000	88.7	84.2	86.0	85.7	88.0	91.0
15	1250	93.7	87.7	87.6	88.7	91.1	92.4
16	1600	86.5	80.0	81.3	82.0	84.8	85.5
17	2000	88.0	81.0	80.8	81.3	85.6	84.8
18	2500	91.2	84.5	82.5	83.7	87.0	86.8
19	3150	88.1	82.5	81.5	82.1	85.5	85.0
20	4000	87.1	82.1	81.8	82.2	86.0	85.0
21	5000	86.6	81.3	81.3	82.3	84.9	84.9
22	6300	87.1	81.6	81.6	83.0	84.9	85.8
23	8000	88.4	82.3	82.2	83.5	85.4	85.7
24	10000	89.8	85.1	83.4	84.1	86.5	87.9
25	12500	86.2	84.1	83.5	83.5	85.9	87.7
26	16000	87.8	82.0	82.6	84.0	87.2	91.0
27	20000	87.3	82.2	79.2	78.3	82.0	85.9

AVERAGED PREDATA DATE = 417. RUN NUMBER = 17. RPM = 2439.

CONFIGURATION NUMBER = 300. PERCENT SPEED = 6

FOLDOUT FRAME RELATIVE HUMIDITY = 72. BARMETER = 29.45

FGK 8881

2

X.M.D. #16

6 7  
D FROM THE ORIGINAL DATA.

CONFIGURATION NO 300

SPEED = 2439. RPM

PERCENT SPEED = 65.0

LOSSLESS ARRAY

FT RADIUS WITH NO ATMOSPHERIC ATTENUATION  
(POWER AND DIRECTIVITY COMPUTATIONS)

17. RPM = 2439.

0. PERCENT SPEED = 65. TEMPERATURE = 46.

BAROMETER = 29.45

25° DOOR

FOLDOUT FRAME

2

DATA OF 417. SUBSET NO. 3. READINGS 8 9 10

SIX DECIBELS HAVE BEEN SUBTRACTED FROM THE ORIGINAL DATA  
QCSEE OTW ENGINE TEST  
BULK ABSORBER INLET  
3000 FT. RUNWAY CCNF.  
ENGINE ALONE TEST

SPL LOSSLESS ARR

FLYOVER PLANE DATA AT 100.0 FT RADIUS WITH NO ATMOSP  
(FOR POWER AND DIRECTIVITY COMPO

ANGLE, ~~30~~ 30. 60. 80. 90. 100. 120.

COMPUTED OASPL 105.3 103.8 105.1 105.6 108.6 111.2

BAND FREQUENCY

1	50	85.7	85.8	87.0	87.5	89.7	95.7
2	63	86.2	87.3	89.0	89.8	91.3	96.2
3	80	86.8	89.7	92.2	92.5	94.5	98.5
4	100	86.2	89.7	92.5	92.0	96.2	99.3
5	125	88.2	90.0	91.2	91.7	95.7	99.4
6	160	88.0	89.4	91.2	91.5	95.0	99.4
7	200	88.5	90.0	91.2	92.7	95.4	100.9
8	250	87.9	88.9	91.9	93.9	97.4	103.2
9	315	87.1	90.4	94.7	94.9	98.2	100.1
10	400	86.7	89.6	93.2	95.2	98.7	99.6
11	500	85.8	89.1	93.9	94.6	96.9	98.4
12	630	84.8	88.9	92.1	92.8	94.9	96.4
13	800	85.6	88.6	91.0	92.0	94.6	95.3
14	1000	87.5	87.7	89.3	90.0	93.0	94.2
15	1250	93.2	89.6	91.1	90.4	94.6	95.6
16	1600	97.0	91.5	93.0	91.3	95.1	97.8
17	2000	90.8	86.9	87.1	87.9	90.4	90.1
18	2500	94.7	90.7	89.5	89.3	91.6	90.8
19	3150	96.0	93.6	91.5	90.3	93.5	92.6
20	4000	94.8	90.8	90.3	89.8	92.3	90.1
21	5000	93.5	89.9	89.5	89.4	91.4	90.4
22	6300	91.6	90.2	88.8	89.0	91.2	90.7
23	8000	91.0	90.3	86.3	87.2	89.5	88.1
24	10000	90.6	89.9	86.6	87.0	90.2	88.5
25	12500	89.6	86.6	86.1	87.2	90.3	89.1
26	16000	90.4	86.5	86.0	87.3	90.6	91.9
27	20000	90.3	85.7	84.1	84.7	88.0	91.0

AVERAGED PREDATA

DATE = 417.

RUN NUMBER = 17.

RPM = 3039.

CONFIGURATION NUMBER = 300.

PERCENT SPEED =

FOLDOUT FRAME

RELATIVE HUMIDITY = 76.

BAROMETER = 29.45

FGK 14065

3

XM 0.565

ED FROM THE ORIGINAL DATA.

CONFIGURATION NO 300

SPEED = 3039. RPM

PERCENT SPEED = 81.0

LOSSLESS ARRAY

FT RADIUS WITH NO ATMOSPHERIC ATTENUATION  
POWER AND DIRECTIVITY COMPUTATIONS)

17. RPM = 3039.

10. PERCENT SPEED = 81. TEMPERATURE = 45.

BAROMETER = 29.45 25° DOOR

FOLDOUT FRAME

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DATA OF 417. SUBSET NO. 4. READINGS 11 12 13

SIX DECIBELS HAVE BEEN SUBTRACTED FROM THE ORIGINAL DATA.  
QCSEE DTW ENGINE TEST  
BULK ABSORBER INLET  
3000 FT. RUNWAY CENE.  
ENGINE ALONE TEST

ORIGINAL PAGE IS  
OF POOR QUALITY

SPL LOSSLESS ARRAY

FLYOVER PLANE DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERIC  
(FOR POWER AND DIRECTIVITY COMPUTATION)

ANGLE OF 30. 60. 80. 90. 100. 120.

COMPUTED DASPL 104.7 105.6 107.5 107.9 109.6 113.0

BAND FREQUENCY

1	50	84.8	88.0	88.5	88.3	90.2	96.5
2	63	87.3	88.7	91.0	90.2	92.0	98.3
3	80	87.5	91.8	94.2	94.0	95.0	101.3
4	100	88.8	90.7	93.3	93.0	95.5	100.7
5	125	90.2	92.2	93.4	93.5	95.9	102.2
6	160	89.9	92.2	94.2	94.2	95.7	101.9
7	200	89.9	92.9	93.9	93.9	96.7	101.7
8	250	89.0	92.7	94.2	94.9	96.7	103.4
9	315	89.1	93.9	96.9	96.6	97.9	101.7
10	400	88.4	92.7	95.4	97.7	98.7	101.6
11	500	87.4	93.8	97.6	96.8	97.8	100.1
12	630	86.8	92.4	96.4	95.4	96.6	99.1
13	800	87.3	91.6	95.8	95.5	95.6	98.0
14	1000	87.5	90.5	93.3	93.0	94.3	96.8
15	1250	90.9	90.7	92.2	92.9	94.7	96.2
16	1600	97.8	96.0	96.1	96.8	100.0	99.1
17	2000	89.3	88.8	89.9	90.8	92.8	93.9
18	2500	91.5	89.8	90.3	91.3	93.0	93.2
19	3150	95.6	92.6	92.0	93.6	96.5	96.0
20	4000	91.1	90.0	91.1	91.8	93.4	92.3
21	5000	91.7	90.7	91.4	92.2	93.7	92.9
22	6300	90.7	89.2	90.0	91.4	93.7	92.7
23	8000	88.5	87.4	87.9	89.4	91.2	90.7
24	10000	88.0	87.3	87.7	89.4	91.0	90.6
25	12500	87.0	86.3	87.7	89.4	91.3	91.7
26	16000	87.4	85.9	87.7	89.7	91.9	94.4
27	20000	87.4	85.1	85.3	87.5	89.6	93.1

AVERAGED PREDATA

DATE = 417.

RUN NUMBER = 17.

RPM = 3227.

CONFIGURATION NUMBER = 300.

PERCENT SPEED = 86.

FOLDOUT FRAME 1

RELATIVE HUMIDITY = 77.

BAROMETER = 29.45

FGK 15994

4

XM11 0.624

TED FROM THE ORIGINAL DATA.

CONFIGURATION NO 300  
SPEED = 3227. RPM  
PERCENT SPEED = 86.0

LOSSLESS ARRAY

ORIGINAL PAGE IS  
OF POOR QUALITY

0 FT RADIUS WITH NO ATMOSPHERIC ATTENUATION  
POWER AND DIRECTIVITY COMPUTATIONS)

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17. RPM = 3227.

300. PERCENT SPEED = 86. TEMPERATURE = 44.

BAROMETER = 29.45

25° DOOR

FOLDOUT FRAME 2

DATA OF 417. SUBSET NO. 5. READINGS 14 15 16

SIX DECIBELS HAVE BEEN SUBTRACTED FROM THE ORIGINAL DATA.

CCSEE OTW ENGINE TEST  
PULK ABSORBER INLET  
3000 FT. RUNWAY CCNF.  
ENGINE ALONE TEST

*SPL* LOSSLESS ARRAY

*FLYOVER PLANE* DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERIC AT  
(FOR POWER AND DIRECTIVITY COMPUTATIONS)

ANGLE  $\theta_f$  30. 60. 80. 90. 100. 120.

COMPUTED OASPL 107.5 105.4 107.9 108.7 112.1 114.8

BAND FREQUENCY

1	50	86.5	88.0	91.0	90.3	95.5	96.3
2	63	88.2	88.7	92.0	93.0	96.0	98.2
3	80	89.8	90.5	95.0	95.0	98.0	101.3
4	100	89.8	91.5	93.8	94.7	98.8	101.8
5	125	90.0	92.2	94.4	95.5	99.0	102.9
6	160	91.7	92.9	94.4	94.9	99.2	103.7
7	200	92.0	92.5	94.7	96.4	100.2	103.7
8	250	90.2	92.9	93.5	95.2	99.0	104.0
9	315	90.6	94.7	96.6	97.6	101.2	104.1
10	400	89.6	93.7	96.1	98.2	102.4	104.2
11	500	89.1	94.6	96.6	96.9	101.6	103.6
12	630	88.4	93.8	95.8	96.3	99.3	101.3
13	800	88.8	93.0	95.8	95.8	98.1	100.1
14	1000	90.2	90.7	93.7	93.8	96.2	99.5
15	1250	93.1	91.1	92.2	93.2	95.4	97.6
16	1600	102.6	94.6	97.3	97.0	98.5	102.6
17	2000	92.3	88.9	90.9	92.1	94.1	96.4
18	2500	93.9	89.5	90.8	92.2	94.0	95.0
19	3150	98.7	89.7	92.8	94.3	97.3	98.2
20	4000	93.5	87.3	91.2	92.2	95.2	94.8
21	5000	94.5	87.8	92.2	92.5	95.5	95.2
22	6300	93.1	86.2	91.0	92.3	94.8	95.0
23	8000	90.2	84.3	88.7	89.9	92.5	93.1
24	10000	89.7	86.2	88.4	89.6	92.4	93.1
25	12500	88.4	85.4	88.8	89.7	92.5	93.8
26	16000	89.4	85.0	89.1	90.7	93.7	96.3
27	20000	88.8	84.7	86.6	88.8	93.0	96.2

AVERAGED PREDATA

DATE = 417.

RUN NUMBER = 17.

RPM = 3364.

CONFIGURATION NUMBER = 300.

PERCENT SPEED = 90.

RELATIVE HUMIDITY = 74.

BAROMETER = 29.44

FOLDOUT FRAME 1

FGK 17409  
XMI 0.677

5

ACTED FROM THE ORIGINAL DATA.

CONFIGURATION NO 300

SPEED = 3364. RPM

PERCENT SPEED = 90.0

# LOSSLESS ARRAY

.0 FT RADIUS WITH NO ATMOSPHERIC ATTENUATION  
(POWER AND DIRECTIVITY COMPUTATIONS)

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= 17. RPM = 3364.

300. PERCENT SPEED = 90. TEMPERATURE = 44.

4. BAROMETER = 29.44 25° DOOR

5

FOLDOUT FRAME

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DATA OF 417. SUBSET NO. 6. READINGS 17 18 19

SIX DECIBELS HAVE BEEN SUBTRACTED FROM THE ORIGINAL DATA.

QCSEE OTW ENGINE TEST  
BULK ABSORBER INLET  
3000 FT. RUNWAY CCONF.  
ENGINE ALONE TEST

ORIGINAL PAGE IS  
OF POOR QUALITY

SPL LOSSLESS ARRAY

FLYOVER PLANE DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERIC  
(FOR POWER AND DIRECTIVITY COMPUTATION)

ANGLE  $\theta$  30. 60. 80. 90. 100. 120.

COMPUTED CASPL 103.4 106.2 110.0 112.7 113.3 116.6

BAND FREQUENCY

1	50	88.7	90.3	92.3	92.7	95.3	99.3
2	63	89.7	90.5	96.0	94.7	96.5	101.7
3	80	91.3	93.2	96.8	97.5	98.3	103.5
4	100	89.5	93.5	97.2	96.7	98.8	103.7
5	125	91.5	93.9	96.5	98.0	100.0	106.7
6	160	92.4	94.4	97.9	99.0	99.0	105.9
7	200	93.7	93.9	98.4	99.7	100.5	106.4
8	250	92.2	93.9	96.2	98.5	99.0	105.5
9	315	92.2	95.4	98.2	100.6	100.7	106.1
10	400	90.7	95.9	97.7	101.4	102.9	105.2
11	500	89.3	94.4	95.8	102.4	103.3	105.1
12	630	89.6	94.1	98.9	101.4	103.1	102.9
13	800	88.3	93.5	98.5	101.0	101.0	102.6
14	1000	88.2	92.0	96.5	98.5	98.8	101.7
15	1250	88.1	90.6	94.9	98.2	97.4	99.4
16	1600	92.0	93.1	96.1	99.6	101.3	102.0
17	2000	87.9	89.8	93.9	97.4	97.6	99.6
18	2500	86.3	88.5	92.5	96.5	96.0	96.8
19	3150	87.3	88.2	92.8	98.5	98.5	97.2
20	4000	85.0	88.0	92.0	97.0	96.3	96.3
21	5000	83.8	87.8	92.0	97.8	96.2	95.5
22	6300	82.6	87.1	91.1	97.3	96.0	95.3
23	8000	79.3	84.9	88.7	94.4	93.9	92.9
24	10000	79.1	84.9	88.6	93.9	93.4	92.4
25	12500	77.9	84.6	88.3	93.8	93.2	93.1
26	16000	78.6	84.5	89.8	94.9	93.9	96.1
27	20000	81.2	83.6	90.5	94.5	93.9	96.6

AVERAGED PREDATA

DATE = 417.

RUN NUMBER = 17.

RPM = 3551.

CONFIGURATION NUMBER = 300.

PERCENT SPEED = 9

FOLDOUT FRAME 1

RELATIVE HUMIDITY = 74.

BAROMETER = 29.44

FGK 21076

XM11 0.771

6

ITED FROM THE ORIGINAL DATA.

CONFIGURATION NO 300  
SPEED = 3551. RPM  
PERCENT SPEED = 95.0

LOSSLESS ARRAY

0 FT RADIUS WITH NO ATMOSPHERIC ATTENUATION  
POWER AND DIRECTIVITY COMPUTATIONS)

ORIGINAL PAGE IS  
OF POOR QUALITY

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= 17. RPM = 3551.

300. PERCENT SPEED = 95. TEMPERATURE = 44.

BAROMETER = 29.44

25° DOOR

FOLDOUT FRAME

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DATA OF 417. SUBSET NO. 7. READINGS 20 21 22

SIX DECIBELS HAVE BEEN SUBTRACTED FROM THE ORIGINAL DATA.

QCSEE OTW ENGINE TEST  
BULK ABSORBER INLET  
3000 FT. RUNWAY CNF.  
ENGINE ALONE TEST

ORIGINAL PAGE IS  
OF POOR QUALITY

*SPL* LOSSLESS ARRAY

*FLYOVER PLANE* DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERIC A  
(FOR POWER AND DIRECTIVITY COMPUTATION)

ANGLE,  $\theta$ , 30. 60. 80. 90. 100. 120.

COMPUTED OASPL 103.8 107.2 110.4 111.5 114.0 117.6

BAND FREQUENCY

1	50	89.2	90.7	94.8	93.5	94.7	99.2
2	63	90.3	92.7	96.2	95.0	96.5	103.0
3	80	91.8	94.2	98.2	98.5	99.3	105.0
4	100	91.2	93.3	96.8	98.0	98.8	103.7
5	125	91.7	94.5	96.7	98.2	100.2	105.9
6	160	93.5	95.2	97.4	98.0	100.0	106.5
7	200	94.0	95.2	98.2	99.0	101.5	107.5
8	250	92.5	94.5	96.7	98.2	100.0	106.2
9	315	92.2	96.4	98.2	98.9	102.2	106.6
10	400	92.1	96.4	98.1	100.7	103.1	106.7
11	500	91.1	96.1	100.8	101.6	103.6	106.9
12	630	90.6	95.4	99.6	100.1	102.4	104.9
13	800	89.6	95.3	98.6	99.6	102.0	104.0
14	1000	89.5	93.7	97.2	97.5	100.3	102.7
15	1250	88.2	92.4	95.1	96.6	99.1	100.6
16	1600	90.3	92.3	96.0	97.8	101.6	102.1
17	2000	87.6	91.4	94.1	96.6	99.6	101.1
18	2500	85.5	89.8	92.8	95.0	97.5	97.5
19	3150	84.7	89.2	93.2	95.7	98.7	98.0
20	4000	83.0	89.0	92.2	94.5	97.9	97.7
21	5000	81.6	88.6	92.7	94.5	97.8	96.5
22	6300	80.3	87.6	92.0	93.6	97.5	96.8
23	8000	77.2	85.4	89.5	91.4	95.2	95.0
24	10000	76.5	85.4	89.4	90.6	94.9	94.2
25	12500	75.6	85.6	89.7	90.5	95.0	94.6
26	16000	76.3	85.3	90.4	92.1	96.3	97.6
27	20000	81.2	84.4	91.7	92.4	96.4	98.1

AVERAGED PREDATA DATE = 417. RUN NUMBER = 17. RPM = 3626.

CONFIGURATION NUMBER = 300. PERCENT SPEED = 97.

FOLDOUT FRAME |

RELATIVE HUMIDITY = 74. BAROMETER = 29.44

FGK 21030

XM11 .787

1

CTED FROM THE ORIGINAL DATA.

CONFIGURATION NO 300

SPEED = 3626. RPM

PERCENT SPEED = 97.0

LOSSLESS ARRAY

ORIGINAL PAGE IS  
OF POOR QUALITY0.0 FT RADIUS WITH NO ATMOSPHERIC ATTENUATION  
(POWER AND DIRECTIVITY COMPUTATIONS)

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= 17. RPM = 3626.

300. PERCENT SPEED = 97. TEMPERATURE = 44.

. BAROMETER = 29.44 25° DOOR

FOLDOUT FRAME 2

DATA OF 417. SUBSET NO. 8. READINGS 23 24 25

SIX DECIBELS HAVE BEEN SUBTRACTED FROM THE ORIGINAL DATA

COSEE CTW ENGINE TEST  
BULK ABSORBER INLET  
3000 FT. RUNWAY CONF.  
ENGINE ALONE TEST

SPL LOSSLESS ARR

FLYOVER PLANE DATA AT 100.0 FT RADIUS WITH NO ATMOSP  
(FOR POWER AND DIRECTIVITY COMP

ANGLE $\theta$		30.	60.	80.	90.	100.	120.
COMPUTED CASPL		96.7	93.5	92.5	94.0	95.6	97.9
BAND FREQUENCY							
1	50	77.8	73.7	77.5	77.2	78.2	80.0
2	63	79.2	79.0	81.8	80.3	82.0	86.7
3	80	78.2	80.0	82.7	84.2	85.3	87.5
4	100	78.0	76.0	81.0	80.0	82.2	84.7
5	125	76.5	76.0	75.9	75.5	77.5	82.4
6	160	75.7	76.2	77.4	77.0	76.9	81.0
7	200	77.9	79.2	78.9	79.0	77.7	82.9
8	250	78.0	75.7	75.7	77.0	78.5	84.9
9	315	77.2	77.6	78.4	81.1	81.6	82.2
10	400	75.4	77.9	76.6	79.2	82.6	82.2
11	500	75.8	77.8	79.4	81.3	81.1	82.1
12	630	77.4	77.8	79.9	79.9	80.1	82.6
13	800	89.6	85.8	83.5	83.5	84.1	90.3
14	1000	82.5	78.3	79.0	80.0	80.2	83.5
15	1250	81.6	76.7	77.6	79.0	80.9	80.6
16	1600	85.8	79.3	75.3	76.3	79.0	80.0
17	2000	80.9	75.4	72.1	73.4	76.8	77.8
18	2500	83.7	76.8	72.7	73.9	77.5	78.7
19	3150	81.5	75.7	71.5	72.7	77.0	77.7
20	4000	80.3	76.4	71.5	72.8	76.9	77.2
21	5000	79.9	76.4	73.4	75.4	79.1	78.2
22	6300	86.2	80.0	76.4	80.9	83.0	82.7
23	8000	88.4	84.0	73.6	76.9	79.4	79.4
24	10000	81.8	81.8	74.9	77.9	80.4	79.9
25	12500	79.6	79.2	80.6	85.2	87.7	87.6
26	16000	83.0	79.1	74.8	79.6	83.0	85.6
27	20000	82.9	80.9	74.8	76.2	79.8	82.3

AVERAGED PREDATA DATE = 417. RUN NUMBER = 17. RPM = 1761.

CONFIGURATION NUMBER = 301. PERCENT SPEED =

FOLDOUT FRAME

RELATIVE HUMIDITY = 74. BAROMETER = 29.44

FGK 4582

8

XM<sub>11</sub> .274

24 25

ACTED FROM THE ORIGINAL DATA.

CONFIGURATION NO 300  
SPEED = 1761. RPM  
PERCENT SPEED = 47.0

LOSSLESS ARRAY

0.0 FT RADIUS WITH NO ATMOSPHERIC ATTENUATION  
(R POWER AND DIRECTIVITY COMPUTATIONS)

20.

7.9

0.0

6.7

7.5

4.7

2.4

1.0

2.9

4.9

2.2

2.2

2.1

2.6

0.3

3.5

0.6

0.0

7.8

8.7

7.7

7.2

8.2

2.7

5.4

9.9

7.6

5.6

2.3

R = 17. RPM = 1761.

301. PERCENT SPEED = 47. TEMPERATURE = 44.

14. BAROMETER = 29.44 25° DOOR

# SPL LOSSLESS DATA AT 100 FEET RADIUS

QCSEE OTW ENGINE TEST

BULK ABSORBER INLET

3000 FT. RUNWAY CONF.

ENGINE ALONE TEST

FOLDOUT FRAME

READING NUMBERS = 55 56 57

CONFIGURATION NO = 300

SPEED = 3253. RPM

TEMPERATURE = 59.0 F

RELATIVE HUMIDITY = 34.0 PC

SIDELINE PLANE

BOOM MICROPHONES - LOSSLESS DATA

MIC #	13	14	15	16	17
R	0.	17.	31.	43.	54.
THETA, $\theta_s$	90.	90.	90.	90.	90.
Z	106.	98.	91.	86.	81.
DISTANCE	91.	85.	82.	83.	86.
PHI, $\phi$	0.	11.	22.	31.	39.

INDEX	FREQ					
1	50.	87.5	88.2	87.8	89.0	89.7
2	63.	89.6	90.6	89.8	91.0	90.7
3	80.	91.1	92.4	92.9	93.7	93.2
4	100.	91.5	91.1	92.3	91.9	91.7
5	125.	91.3	91.9	92.9	93.5	92.5
6	160.	91.3	91.7	92.8	93.7	93.0
7	200.	91.8	92.4	92.8	94.5	94.5
8	250.	92.0	93.6	93.6	93.7	93.9
9	315.	91.9	92.9	93.8	94.4	94.5
10	400.	91.0	92.4	93.1	93.6	95.0
11	500.	91.5	91.9	93.1	94.7	95.7
12	630.	90.4	91.6	92.7	94.3	94.9
13	800.	90.4	92.0	93.0	94.4	94.9
14	1000.	89.4	91.5	91.4	92.5	92.4
15	1250.	88.2	90.4	90.9	92.2	91.7
16	1600.	91.4	95.6	96.0	95.6	94.4
17	2000.	86.2	87.9	88.4	89.4	89.5
18	2500.	87.1	88.4	88.1	89.4	89.4
19	3150.	89.4	91.2	90.6	92.0	92.0
20	4000.	87.5	89.3	88.3	89.7	90.6
21	5000.	87.5	89.6	88.3	90.6	90.9
22	6300.	87.5	89.9	87.6	91.0	90.5
23	8000.	85.6	89.0	85.1	89.8	89.7
24	10000.	86.2	89.3	84.3	90.5	89.8
25	12500.	86.9	89.1	83.3	90.7	90.1
26	16000.	87.1	90.3	82.8	92.0	91.2
27	20000.	86.0	87.2	82.3	88.9	88.0

CASPL 103.9 105.5 105.5 106.9 106.8

FOLDOUT FRAME 2

56

57

SPEED = 3253. RPM

PERCENT SPEED 86.0

FGK 16063

RELATIVE HUMIDITY = 34.0 PC

BAROMETER = 29.29 IN HG

YM 11.609

DATA

11 1/2° DOOR



DATA OF 427. SUBSET NO. 10. READINGS 55 56 57

CCSEE PTW ENGINE TEST  
PULK ABSORBER INLET  
3000 FT. RUNWAY CNF.  
ENGINE ALONE TEST

*SPL* LOSSLESS ARRAY

*FLYOVER PLANE* DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERIC ATTEN  
(FOR POWER AND DIRECTIVITY COMPUTATIONS)

*ENGINE CENTERLINE MICROPHONES*

ANGLE  $\theta$  60. 90. 120.

COMPUTED CASPL 106.3 110.2 113.3

BAND FREQUENCY

1	50	89.7	94.7	97.9
2	63	89.9	95.2	99.7
3	80	92.4	97.0	100.2
4	100	89.9	96.7	98.4
5	125	90.5	96.0	97.7
6	160	86.9	93.2	93.7
7	200	85.2	89.7	97.1
8	250	87.7	91.7	103.7
9	315	93.1	98.1	104.8
10	400	94.1	101.3	104.3
11	500	93.0	101.0	100.5
12	630	90.8	96.5	101.3
13	800	91.7	98.5	101.0
14	1000	90.9	94.9	99.1
15	1250	91.0	93.2	97.0
16	1600	96.5	97.1	99.6
17	2000	89.3	92.5	93.5
18	2500	91.7	92.0	94.0
19	3150	96.7	95.3	96.7
20	4000	91.2	93.6	93.6
21	5000	92.6	92.2	94.1
22	6300	94.1	93.7	93.1
23	8000	89.3	90.4	90.4
24	10000	92.7	91.1	90.9
25	12500	90.7	92.2	91.2
26	16000	90.6	93.1	93.1
27	20000	92.5	97.9	98.1

FOLDOUT FRAME |

10

CONFIGURATION NO 300  
SPEED = 3253. RPM  
PERCENT SPEED = 86.0

LOSSLESS ARRAY

FT RADIUS WITH NO ATMOSPHERIC ATTENUATION  
(POWER AND DIRECTIVITY COMPUTATIONS)

10

FOLDOUT FRAME

2

DATA OF 427. SUBSET NO. 10. READINGS 55 56 57

SIX DECIBELS HAVE BEEN SUBTRACTED FROM THE ORIGINAL DATA.  
QCSEE CTW ENGINE TEST  
BULK ABSORBER INLET  
3000 FT. RUNWAY CCNF.  
ENGINE ALONE TEST

ORIGINAL PAGE IS  
OF POOR QUALITY

SPL LOSSLESS ARRAY

FLYOVER PLANE

DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERIC ATT  
(FOR POWER AND DIRECTIVITY COMPUTATIONS)

ANGLE		0.	30.	50.	60.	70.	80.	90.	100.	110.	120.	130.	140.
COMPUTED DASPL		104.3	103.7	104.4	104.0	104.8	105.1	105.6	108.4	112.0	112.5	111.9	111.0
BAND FREQUENCY													
1	50	81.7	82.0	85.3	85.0	85.5	86.3	86.3	88.2	92.7	95.0	97.8	101.0
2	63	84.3	83.5	85.2	86.2	87.3	87.3	88.5	91.2	95.3	95.5	100.0	97.8
3	80	87.8	85.2	89.0	89.0	89.2	89.8	90.7	93.0	97.3	98.0	99.8	100.0
4	100	87.2	85.5	87.2	88.0	89.9	90.5	90.7	94.4	97.2	98.2	101.0	101.0
5	125	86.7	86.2	87.9	89.7	90.0	90.4	90.9	94.5	98.9	99.9	101.0	101.0
6	160	85.5	86.2	87.9	89.0	90.5	90.7	90.9	93.5	97.4	100.2	99.9	97.8
7	200	85.5	87.5	88.5	89.0	90.0	91.7	92.4	94.7	97.7	101.7	100.2	99.9
8	250	86.2	86.9	87.9	90.1	91.9	92.9	91.9	94.2	100.1	102.7	100.9	97.8
9	315	84.2	86.2	89.1	92.7	92.9	91.9	92.4	96.7	99.6	102.2	98.9	98.0
10	400	82.3	85.9	89.9	90.8	92.6	93.3	95.8	98.9	102.3	102.3	99.4	97.8
11	500	81.9	85.3	89.9	91.3	93.8	95.4	93.9	96.9	100.9	100.3	98.3	97.8
12	630	81.8	84.5	89.1	89.6	93.5	93.8	94.3	96.6	100.8	99.1	97.6	95.0
13	800	83.2	84.0	89.3	89.8	92.2	92.8	93.2	96.0	99.7	98.5	96.7	95.0
14	1000	85.6	85.1	87.9	88.2	90.6	90.2	90.2	93.4	97.1	96.9	95.7	94.0
15	1250	87.8	88.2	88.7	88.0	89.3	89.1	89.8	91.8	95.3	95.5	93.8	91.0
16	1600	95.9	96.3	96.4	93.1	93.8	92.4	93.3	96.4	99.3	97.3	96.9	93.0
17	2000	88.5	87.5	87.6	87.1	96.6	86.8	88.1	91.0	93.6	92.8	90.8	88.0
18	2500	93.4	91.0	90.3	88.2	88.5	87.8	88.2	91.3	93.3	93.1	90.8	88.0
19	3150	97.3	95.8	95.1	92.5	91.3	91.3	91.0	94.6	96.3	93.8	91.6	89.0
20	4000	92.2	89.7	89.9	88.4	87.9	87.4	88.7	92.4	93.0	91.4	89.5	87.0
21	5000	92.4	91.4	91.7	90.7	89.9	89.1	89.6	92.2	93.0	91.2	89.6	86.0
22	6300	91.1	90.3	90.3	89.3	88.3	88.6	89.8	92.1	92.1	91.0	89.5	86.0
23	8000	88.9	88.6	88.4	87.8	86.3	86.8	87.8	90.4	90.3	89.3	87.8	83.0
24	10000	88.7	89.0	88.9	88.2	86.7	87.4	88.5	91.1	90.9	89.6	88.3	84.0
25	12500	87.8	87.9	88.1	87.8	85.8	87.3	89.7	91.7	91.7	90.8	88.7	85.0
26	16000	89.1	88.8	88.4	88.6	87.2	89.0	90.9	92.3	94.6	93.6	91.6	89.0
27	20000	93.1	92.9	92.8	92.6	92.4	92.9	93.0	93.6	101.9	102.4	102.5	101.0

FOLDOUT FRAME

11

ED FROM THE ORIGINAL DATA.

CONFIGURATION NC 300  
SPEED = 3253. RPM  
PERCENT SPEED = 86.0

LOSSLESS ARRAY

FT RADIUS WITH NO ATMOSPHERIC ATTENUATION  
POWER AND DIRECTIVITY COMPUTATIONS)

ORIGINAL PAGE IS  
OF POOR QUALITY

90. 100. 110. 120. 130. 140.

105.6 108.4 112.0 112.5 111.9 111.2

86.3	88.2	92.7	95.0	97.8	101.2
88.5	91.2	95.3	95.5	100.0	97.8
90.7	93.0	97.3	98.0	99.8	100.8
90.7	94.4	97.2	98.2	101.0	101.7
90.9	94.5	98.9	99.5	101.0	101.2
90.9	93.5	97.4	100.2	99.9	97.3
92.4	94.7	97.7	101.7	100.2	99.9
91.9	94.2	100.1	102.7	100.9	97.9
92.4	96.7	99.6	102.2	98.9	98.6
95.8	98.9	102.3	102.3	99.4	97.4
93.9	96.9	100.9	100.3	98.3	97.1
94.3	96.6	100.8	99.1	97.6	95.3
93.2	96.0	99.7	98.5	96.7	95.7
90.2	93.4	97.1	96.9	95.7	94.1
89.8	91.8	95.3	95.5	93.8	91.6
93.3	96.4	99.3	97.3	96.9	93.6
88.1	91.0	93.6	92.8	90.8	88.8
88.2	91.3	93.3	93.1	90.8	88.6
91.0	94.6	96.3	93.8	91.6	89.5
88.7	92.4	93.0	91.4	89.5	87.0
89.6	92.2	93.0	91.2	89.9	86.5
89.8	92.1	92.1	91.0	89.5	86.1
87.8	90.4	90.3	89.3	87.8	83.9
88.5	91.1	90.9	89.6	88.3	84.6
89.7	91.7	91.7	90.8	88.7	85.2
90.9	92.3	94.6	93.6	91.6	89.3
93.0	93.6	101.9	102.4	102.5	102.0

# SPL LOSSLESS DATA AT 100 FCCT RADIUS

QCSEE OTW ENGINE TEST

BULK ABSORBER INLET

3000 FT. RUNWAY CONF.

FOLDOUT FRAME

ENGINE ALCNE TEST

READING NUMBERS = 58 59 60

CONFIGURATION NO = 300

SPEED = 3408. RPM

TEMPERATURE = 60.0 F

RELATIVE HUMIDITY = 34.0 PC

SIDELINE PLANE

BCOM MICROPHONES - LOSSLESS DATA

MIC #	13	14	15	16	17
R	0.	17.	31.	43.	54.
THETA, $\theta_s$	90.	90.	90.	90.	90.
Z	106.	98.	91.	86.	81.
DISTANCE	91.	85.	82.	83.	86.
PHI, $\phi$	0.	11.	22.	31.	39.

INDEX	FREQ					
1	50.	88.1	89.2	89.4	89.5	91.0
2	63.	90.1	91.2	92.1	91.2	92.7
3	80.	91.5	93.1	93.9	94.5	95.2
4	100.	91.8	93.4	93.4	93.9	93.5
5	125.	92.2	94.1	93.8	95.2	95.0
6	160.	92.0	94.2	94.4	94.4	94.8
7	200.	93.2	94.7	95.6	96.0	96.7
8	250.	93.2	94.1	94.8	95.2	96.5
9	315.	92.7	94.8	95.0	95.9	96.9
10	400.	93.2	93.4	94.6	96.2	96.7
11	500.	92.9	93.8	94.1	95.9	96.7
12	630.	91.2	93.0	94.3	95.9	96.9
13	800.	90.9	94.1	94.8	95.9	96.4
14	1000.	89.6	93.3	93.7	94.3	94.4
15	1250.	88.7	92.1	92.4	93.4	93.8
16	1600.	92.2	96.6	97.2	97.3	96.4
17	2000.	87.0	90.1	90.4	91.5	91.7
18	2500.	87.2	89.8	89.8	90.9	91.0
19	3150.	89.0	92.0	91.9	93.5	93.5
20	4000.	87.4	90.9	89.6	91.4	92.1
21	5000.	87.0	90.7	89.6	92.0	92.2
22	6300.	86.8	91.2	88.9	91.9	92.1
23	8000.	84.7	90.3	86.5	91.0	90.8
24	10000.	85.6	90.4	85.9	91.3	90.6
25	12500.	86.4	90.7	84.2	92.0	91.1
26	16000.	87.1	91.7	84.2	93.4	92.1
27	20000.	96.6	88.2	82.7	90.6	89.2

OASPL 104.6 107.0 107.0 108.3 108.6

FOLDOUT FRAME 2

60

SPEED = 3408. RPM

PERCENT SPEED 90.0

FGK 17849

TIVE HUMIDITY = 34.0 PC

BAROMETER = 29.29 IN HG

XM<sub>11</sub> .669

TA

11 1/2° DOOR

S.S. 11

DATA OF 427. SUBSET NO. 11. READINGS 58 59 60

QCSEE OTW ENGINE TEST  
BULK ABSORBER INLET  
3000 FT. RUNWAY CNF.  
ENGINE ALONE TEST

SPL LOSSLESS ARRAY

FLYOVER PLANE

DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERIC  
(FOR POWER AND DIRECTIVITY COMPUTATION)

ENGINE CENTERLINE MICROPHONES

ANGLE OF 60. 90. 120.

COMPUTED DASPL 108.0 111.3 115.1

BAND FREQUENCY

1	50	91.2	94.4	99.9
2	63	93.4	97.0	101.2
3	80	94.9	99.0	102.5
4	100	92.9	97.2	100.2
5	125	92.9	97.4	98.4
6	160	90.1	94.2	95.2
7	200	88.7	90.6	100.1
8	250	90.4	92.7	104.7
9	315	95.4	99.1	107.1
10	400	97.3	102.8	104.9
11	500	95.5	102.3	102.8
12	630	93.3	98.5	103.7
13	800	94.7	100.4	103.2
14	1000	93.7	97.4	101.7
15	1250	93.2	94.8	99.7
16	1600	99.0	97.8	101.4
17	2000	91.5	94.0	96.8
18	2500	92.0	93.0	96.0
19	3150	94.5	95.5	98.0
20	4000	91.2	93.5	95.2
21	5000	90.8	92.1	95.5
22	6300	92.2	93.2	94.9
23	8000	86.9	90.3	92.1
24	10000	89.9	91.2	93.0
25	12500	87.8	91.6	92.8
26	16000	88.3	92.8	94.9
27	20000	98.6	98.7	98.6

13

FOLDOUT FRAME |

59 60

CONFIGURATION NO 300  
SPEED = 3408. RPM  
PERCENT SPEED = 90.0

LOSSLESS ARRAY

0 FT RADIUS WITH NO ATMOSPHERIC ATTENUATION  
POWER AND DIRECTIVITY COMPUTATIONS)

13

FOLDOUT FRAME 2



DATA OF 427. SUBSET NO. 11. READINGS 58 59 60

SIX DECIBELS HAVE BEEN SUBTRACTED FROM THE ORIGINAL DATA  
 QCSEE OTW ENGINE TEST  
 BULK ABSORBER INLET  
 3000 FT. RUNWAY CCNF.  
 ENGINE ALONE TEST

ORIGINAL PAGE IS  
 OF POOR QUALITY

*SPL* LOSSLESS AREA

*FLYOVER PLANE* DATA AT 100.0 FT RADIUS WITH NO ATMOSP  
 (FOR POWER AND DIRECTIVITY COMPU

		ANGLE, $\theta$	0.	30.	50.	60.	70.	80.	90.	100.	110.	120.
COMPUTED OASPL			103.9	103.4	104.0	104.5	105.6	106.1	107.3	111.8	113.2	114.7
BAND FREQUENCY												
1	50		81.5	83.3	85.5	87.2	87.3	87.7	87.7	93.0	92.8	95.7
2	63		85.3	84.3	87.5	88.3	88.5	88.5	89.8	95.5	95.2	98.2
3	80		87.7	85.3	88.8	88.7	90.2	91.5	91.8	95.5	97.8	100.5
4	100		87.7	87.2	88.4	89.4	91.5	91.5	92.2	96.2	96.9	100.2
5	125		88.7	86.9	89.7	89.9	91.5	92.0	92.2	97.5	99.4	102.4
6	160		86.7	87.2	89.0	90.4	92.4	91.5	92.4	96.5	98.4	101.4
7	200		86.9	88.5	90.2	90.2	91.9	92.7	93.9	97.9	100.0	103.5
8	250		88.2	87.9	89.1	90.7	92.2	93.7	94.2	96.4	100.6	103.4
9	315		85.7	87.7	90.6	93.2	94.6	93.6	94.2	99.2	100.7	103.7
10	400		83.4	87.8	91.1	92.4	94.1	94.8	96.6	101.8	103.6	103.4
11	500		82.8	86.1	91.4	93.6	94.8	95.6	95.8	101.1	102.6	103.4
12	630		82.1	86.0	90.3	91.5	94.3	94.1	96.5	99.8	103.0	101.8
13	800		82.5	86.0	90.5	92.3	94.5	94.5	96.3	100.2	101.5	101.3
14	1000		85.1	86.6	88.7	90.1	92.4	93.1	92.9	97.4	98.4	100.1
15	1250		91.0	88.0	89.0	89.1	90.3	90.5	92.0	95.8	96.8	98.6
16	1600		96.6	95.9	95.4	93.9	93.6	94.4	95.3	99.2	100.6	101.9
17	2000		87.6	87.9	87.6	88.1	87.5	88.3	90.3	94.5	95.6	96.5
18	2500		91.5	89.7	88.3	88.1	89.5	88.8	90.8	94.0	94.3	96.3
19	3150		94.4	94.4	92.1	90.4	90.3	90.4	92.6	96.6	96.9	96.6
20	4000		90.1	89.5	88.1	87.8	87.3	88.3	90.7	94.3	94.3	95.5
21	5000		91.1	90.8	88.9	88.3	88.6	88.8	90.8	94.3	93.8	94.8
22	6300		90.0	89.8	87.7	87.0	87.2	88.2	90.5	94.0	93.2	94.9
23	8000		87.8	87.3	85.3	85.1	85.3	86.3	88.6	92.3	91.6	93.6
24	10000		89.1	87.2	85.2	85.8	84.9	87.0	89.3	92.5	92.1	93.6
25	12500		88.5	85.5	84.7	85.4	84.4	87.1	90.0	93.1	92.9	94.5
26	16000		89.9	86.4	85.1	86.1	85.6	89.1	91.3	94.6	95.8	96.9
27	20000		92.6	91.8	92.4	92.4	91.9	92.7	93.6	102.8	102.5	103.1

FOLDOUT FRAME /

14

EXTRACTED FROM THE ORIGINAL DATA.

CONFIGURATION NO 300  
SPEED = 3408. RPM  
PERCENT SPEED = 90.0

LOSSLESS ARRAY

ORIGINAL PAGE IS  
OF POOR QUALITY

100 FT RADIUS WITH NO ATMOSPHERIC ATTENUATION  
(POWER AND DIRECTIVITY COMPUTATIONS)

90. 90. 100. 110. 120. 130. 140.

107.3 111.8 113.2 114.7 113.7 113.4

87.7	87.7	93.0	92.8	95.7	99.3	103.3
89.8	89.8	95.5	95.2	98.2	100.8	102.5
91.8	91.8	95.5	97.8	100.5	102.2	104.0
92.2	92.2	96.2	96.9	100.2	101.4	104.5
92.2	92.2	97.5	99.4	102.4	103.2	103.2
92.4	92.4	96.5	98.4	101.4	102.5	101.4
93.9	93.9	97.9	100.0	103.5	103.0	102.2
94.2	94.2	96.4	100.6	103.4	102.7	98.7
94.2	94.2	99.2	100.7	103.7	101.1	99.2
96.6	96.6	101.8	103.6	103.4	101.1	98.1
95.8	95.8	101.1	102.6	103.4	100.8	97.8
96.5	96.5	99.8	103.0	101.8	100.1	97.5
96.3	96.3	100.2	101.5	101.3	99.8	97.3
92.9	92.9	97.4	98.4	100.1	98.7	95.7
92.0	92.0	95.8	96.8	98.6	96.3	93.1
95.3	95.3	99.2	100.6	101.9	97.1	94.6
90.3	90.3	94.5	95.6	96.5	93.5	89.4
90.8	90.8	94.0	94.3	96.3	93.3	88.3
92.6	92.6	96.6	96.9	96.6	94.1	89.9
90.7	90.7	94.3	94.3	95.5	91.6	87.5
90.8	90.8	94.3	93.8	94.8	91.4	87.4
90.5	90.5	94.0	93.2	94.9	91.4	86.2
88.6	88.6	92.3	91.6	93.6	89.6	84.1
89.3	89.3	92.5	92.1	93.6	89.8	83.8
90.0	90.0	93.1	92.9	94.5	90.2	84.4
91.3	91.3	94.6	95.8	96.9	94.0	89.5
93.6	93.6	102.8	102.5	103.1	102.4	102.9

# *SPL* LOSSLESS DATA AT 100 FEET RADIUS

QCSEE CTH ENGINE TEST

BULK ABSORBER INLET

3000 FT. RUNWAY CONF.

ENGINE ALONE TEST

FOLDOUT FRAME |

READING NUMBERS = 61 62 63

CONFIGURATION NC = 300

SPEED = 3593. RPM

TEMPERATURE = 59.0 F

RELATIVE HUMIDITY = 35.0 PC

*SIDELINE PLANE*

BOOM MICROPHONES - LOSSLESS DATA

MIC #	13	14	15	16	17
R	0.	17.	31.	43.	54.
THETA, $\theta_s$	90.	90.	90.	90.	90.
Z	106.	98.	91.	86.	81.
DISTANCE	91.	85.	82.	83.	86.
PHI, $\phi$	0.	11.	22.	31.	39.

INDEX FREQ

1	50.	92.6	90.5	92.4	92.0	93.2
2	63.	92.3	93.9	93.3	94.0	93.8
3	80.	94.0	95.6	96.8	96.5	96.2
4	100.	93.5	95.1	96.1	95.5	96.0
5	125.	94.0	96.6	96.6	97.4	97.0
6	160.	93.5	96.4	96.4	97.7	97.5
7	200.	94.0	96.9	98.1	98.7	98.7
8	250.	94.2	97.1	98.3	98.4	98.2
9	315.	94.0	97.4	98.5	98.6	99.0
10	400.	93.7	96.8	97.5	98.1	99.2
11	500.	94.7	96.1	96.8	98.1	99.2
12	630.	92.6	95.3	96.7	98.3	99.4
13	800.	92.4	96.1	97.5	98.2	98.9
14	1000.	91.1	95.5	96.4	96.8	97.3
15	1250.	90.5	93.9	95.3	96.2	96.3
16	1600.	92.7	97.0	97.2	96.7	97.7
17	2000.	90.5	94.1	94.6	94.9	95.8
18	2500.	89.0	92.1	92.1	93.4	93.4
19	3150.	90.2	93.5	93.4	94.5	95.0
20	4000.	89.6	93.1	92.4	94.2	95.1
21	5000.	89.3	92.9	92.4	94.3	94.7
22	6300.	89.1	93.3	91.1	94.2	94.3
23	8000.	87.0	92.3	88.6	93.0	93.3
24	10000.	87.4	92.1	87.3	93.1	92.9
25	12500.	87.8	92.1	85.7	93.1	92.8
26	16000.	88.6	92.7	85.3	94.7	93.3
27	20000.	87.1	89.6	83.4	92.3	90.7

CASPL

106.3 109.2 109.5 110.5 110.8

FOLDOUT FRAME 2

2 63

SPEED = 3593. RPM

PERCENT SPEED 95.0

FGK 20351

RELATIVE HUMIDITY = 35.0 PC

BAROMETER = 29.28 IN HG

XM11 .750

DATA

11 1/2° DOOR

S.S. 12

DATA OF 427. SUBSET NO. 12. READINGS 61 62 63

CCSEE CTW ENGINE TEST  
BULK ABSORBER INLET  
3000 FT. RUNWAY CNF.  
ENGINE ALONE TEST

ORIGINAL PAGE IS  
OF POOR QUALITY

*SPZ* LOSSLESS ARRAY

*FLYOVER PLANE* DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERIC  
(FOR POWER AND DIRECTIVITY COMPUTATION)

*ENGINE CENTERLINE MICROPHONES*

ANGLE,  $\theta$  60. 90. 120.

COMPUTED CASPL 108.8 114.0 118.2

BAND FREQUENCY

1	50	94.0	96.0	104.0
2	63	94.9	98.2	104.0
3	80	96.7	100.5	105.7
4	100	96.2	100.2	103.9
5	125	94.9	99.5	102.2
6	160	91.4	97.2	99.2
7	200	90.9	93.1	102.9
8	250	92.1	95.1	105.9
9	315	97.1	101.1	109.4
10	400	98.9	105.3	108.1
11	500	97.6	105.8	105.5
12	630	96.2	101.5	106.7
13	800	97.0	104.0	105.7
14	1000	95.6	100.1	104.4
15	1250	94.3	98.2	102.3
16	1600	94.8	100.1	102.3
17	2000	93.0	99.1	100.5
18	2500	92.0	95.8	99.1
19	3150	91.8	98.3	98.8
20	4000	91.0	97.5	98.3
21	5000	89.6	95.4	97.8
22	6300	90.8	96.5	96.5
23	8000	85.9	93.2	94.1
24	10000	88.5	93.6	94.6
25	12500	86.5	93.3	94.0
26	16000	86.4	94.6	96.1
27	20000	98.0	98.6	108.9

FOLDOUT FRAME /

CONFIGURATION NO 300  
SPEED = 3593. RPM  
PERCENT SPEED = 95.0

LOSSLESS ARRAY

10 FT RADIUS WITH NO ATMOSPHERIC ATTENUATION  
(POWER AND DIRECTIVITY COMPUTATIONS)

ORIGINAL PAGE IS  
OF POOR QUALITY

FOLDOUT FRAME

2

16

DATA OF 427. SUBSET NO. 12. READINGS 61 62 63

SIX DECIBELS HAVE BEEN SUBTRACTED FROM THE ORIGINAL DATA.  
 CCSEE CTW ENGINE TEST  
 BULK ABSORBER INLET  
 3000 FT. RUNWAY CCNF.  
 ENGINE ALONE TEST

SPL LOSSLESS ARRAY

FLYOVER PLANE DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERIC ATTENUATION  
 (FOR POWER AND DIRECTIVITY COMPUTATIONS)

ANGLE OF		0.	30.	50.	60.	70.	80.	90.	100.	110.	120.	130.	140.
COMPUTED DASPL		102.8	102.3	104.6	106.1	107.2	108.7	110.5	113.8	115.8	116.4	116.1	116.4
BAND FREQUENCY													
1	50	85.2	85.3	86.7	88.7	89.7	87.8	92.3	92.2	94.0	99.2	102.7	107.0
2	63	86.0	87.2	88.3	89.5	89.8	91.8	95.3	95.8	97.7	101.3	103.5	105.8
3	80	90.5	89.0	90.0	91.7	93.5	94.7	96.7	97.8	100.7	103.2	105.8	107.0
4	100	90.9	88.2	91.4	92.0	92.9	94.0	95.2	96.9	100.0	101.7	103.5	107.0
5	125	90.7	89.4	91.7	93.5	94.5	95.2	96.9	98.9	102.7	103.7	105.2	105.7
6	160	89.0	90.5	92.0	92.4	94.0	93.5	96.0	98.2	101.7	105.2	104.0	103.4
7	200	98.0	91.2	91.9	92.0	93.9	95.5	97.5	99.7	102.7	105.7	105.4	105.0
8	250	89.4	90.9	91.9	93.9	94.2	96.9	96.9	98.7	102.9	104.2	104.7	102.4
9	315	89.2	91.1	92.7	96.1	96.1	96.2	96.6	101.1	102.9	105.7	104.1	103.2
10	400	86.3	90.3	94.1	94.9	95.9	97.8	99.1	104.3	105.6	105.6	103.9	102.3
11	500	84.4	88.8	93.3	95.6	96.1	99.1	99.4	104.1	105.3	105.8	102.9	101.9
12	630	84.1	88.0	93.1	93.5	95.8	98.5	99.1	103.8	106.3	104.1	103.5	102.9
13	800	94.2	88.0	92.8	94.2	96.5	98.0	97.7	102.8	105.2	103.5	103.5	103.7
14	1000	84.7	86.9	91.6	92.7	94.9	96.0	95.2	100.4	102.0	102.1	101.7	100.2
15	1250	87.2	87.0	90.1	91.8	92.8	93.6	93.8	98.1	99.6	100.1	98.5	97.0
16	1600	94.8	90.6	90.9	92.6	92.8	93.8	94.8	99.6	101.9	100.4	96.9	95.9
17	2000	92.9	87.8	88.8	90.3	90.5	91.8	93.1	98.1	100.5	98.6	95.3	94.0
18	2500	86.6	85.1	87.1	89.1	91.1	91.6	92.4	96.6	98.4	97.3	93.8	92.3
19	3150	89.8	85.6	87.4	88.6	90.4	91.9	93.3	97.9	99.3	95.8	92.9	92.3
20	4000	87.0	84.5	86.3	88.3	89.3	90.7	94.2	97.2	98.8	96.5	93.0	91.1
21	5000	86.2	83.6	85.1	87.6	89.4	90.8	94.3	96.6	97.4	94.9	91.9	90.1
22	6300	84.6	82.5	83.6	86.3	88.1	90.0	93.1	95.8	96.7	95.4	92.0	89.5
23	8000	82.6	80.1	80.9	83.9	85.4	87.6	91.1	94.1	94.9	93.6	90.4	87.6
24	10000	82.3	79.5	81.0	84.2	85.5	87.9	91.5	94.0	95.2	93.1	90.2	87.7
25	12500	81.3	78.4	80.2	84.3	84.1	88.0	91.3	93.3	94.7	94.3	90.4	87.7
26	16000	82.6	79.9	80.5	84.5	85.5	89.8	91.5	94.5	97.2	96.8	93.3	90.4
27	20000	91.5	90.9	91.4	91.6	91.3	92.4	102.0	101.8	102.4	103.0	102.9	102.2

FOLDOUT FRAME

17

FROM THE ORIGINAL DATA.

CONFIGURATION NO 300

SPEED = 3593. RPM

PERCENT SPEED = 95.0

O S S L E S S   A R R A Y

RADIUS WITH NO ATMOSPHERIC ATTENUATION  
(R AND DIRECTIVITY COMPUTATIONS)

90. 100. 110. 120. 130. 140.

0.5 113.8 115.8 116.4 116.1 116.4

2.3	92.2	94.0	99.2	102.7	107.0
5.3	95.8	97.7	101.3	103.5	105.8
6.7	97.8	100.7	103.2	105.8	107.0
5.2	96.9	100.0	101.7	103.5	107.0
6.9	98.9	102.7	103.7	105.2	105.7
6.0	98.2	101.7	105.2	104.0	103.4
7.5	99.7	102.7	105.7	105.4	105.0
6.9	98.7	102.9	104.2	104.7	102.4
6.6	101.1	102.9	105.7	104.1	103.2
9.1	104.3	105.6	105.6	103.9	102.3
9.4	104.1	105.3	105.8	102.9	101.9
9.1	103.8	106.3	104.1	103.5	102.9
7.7	102.8	105.2	103.5	103.5	103.7
5.2	100.4	102.0	102.1	101.7	100.2
3.8	98.1	99.6	100.1	98.5	97.0
4.8	99.6	101.9	100.4	96.9	95.9
3.1	98.1	100.5	98.6	95.3	94.0
2.4	96.6	98.4	97.3	93.8	92.3
3.3	97.9	99.3	95.8	92.9	92.3
4.2	97.2	98.8	96.5	93.0	91.1
4.3	96.6	97.4	94.9	91.9	90.1
3.1	95.8	96.7	95.4	92.0	89.5
1.1	94.1	94.9	93.6	90.4	87.6
1.5	94.0	95.2	93.1	90.2	87.7
1.3	93.3	94.7	94.3	90.4	87.7
1.5	94.5	97.2	96.8	93.3	90.4
2.0	101.9	102.4	103.0	102.9	102.2

17

FOLDOUT FRAME 2



*SPL*

## LOSSLESS DATA AT 100 FOOT RADIUS

QCSEE CTW ENGINE TEST

ORIGINAL PAGE IS  
OF POOR QUALITY

BULK ABSORBER INLET

3000 FT. RUNWAY CONF.

ENGINE ALCNE TEST

FOLDOUT FRAME *1*

READING NUMBERS = 26 27 28

CONFIGURATION NC = 300

SPEED = 2069. RPM

TEMPERATURE = 48.0 F

RELATIVE HUMIDITY = 74.0 PC

*SIDELINE PLANE*

BOOM MICROPHONES - LOSSLESS DATA

MIC # 13 14 15 16 17

R 0. 17. 31. 43. 54.

THETA,  $\theta$  90. 90. 90. 90. 90.

Z 106. 98. 91. 86. 81.

DISTANCE 91. 85. 82. 83. 86.

PHI,  $\phi$  0. 11. 22. 31. 39.

INDEX FREQ

1	50.	78.6	78.5	77.9	79.2	79.5
2	63.	86.0	84.2	85.4	85.5	83.2
3	80.	83.6	82.2	84.6	84.2	83.2
4	100.	80.8	78.4	78.8	80.5	80.8
5	125.	77.7	77.9	78.8	78.2	78.5
6	160.	77.2	77.7	78.1	78.5	78.8
7	200.	78.8	80.2	82.6	84.5	84.5
8	250.	79.3	79.6	81.3	81.5	83.2
9	315.	78.8	79.7	81.3	81.5	81.7
10	400.	78.4	79.1	80.0	80.6	80.4
11	500.	77.0	78.3	81.6	82.6	81.0
12	630.	76.5	78.6	81.6	83.6	82.9
13	800.	79.4	82.6	83.8	84.6	84.6
14	1000.	79.9	84.3	85.7	85.8	86.4
15	1250.	76.8	78.7	80.4	80.6	80.9
16	1600.	74.5	76.4	78.1	78.5	78.8
17	2000.	73.9	76.1	76.5	77.4	77.6
18	2500.	72.5	75.2	75.4	76.2	77.0
19	3150.	72.0	75.1	74.9	76.2	77.2
20	4000.	72.3	75.5	75.0	76.6	77.4
21	5000.	73.6	75.8	75.6	78.0	78.5
22	6300.	76.8	79.7	78.3	81.5	81.3
23	8000.	74.7	78.6	75.7	79.8	80.4
24	10000.	76.1	78.9	75.1	80.9	80.9
25	12500.	79.7	83.2	77.5	84.4	84.8
26	16000.	74.4	78.0	71.6	80.0	80.1
27	20000.	70.8	72.8	66.8	75.4	74.7

OASPL

92.9 94.0 94.7 95.9 95.9

ORIGINAL PAGE IS  
OF POOR QUALITY

FOLDOUT FRAME

2

28

SPEED = 2069. RPM

PERCENT SPEED 54.0

FGK 5404

ATIVE HUMIDITY = 74.0 PC

BAROMETER = 29.33 IN HG

XM11 .313

ATA

25° DOOR

S.S. 13

DATA OF 427. SUBSET NO. 13. READINGS 26 27 28

QCSEE OTW ENGINE TEST  
BULK ABSORBER INLET  
3000 FT. RUNWAY CCNF.  
ENGINE ALONE TEST

*SPL* LOSSLESS ARRAY

*FLYOVER PLANE* DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERIC  
(FOR POWER AND DIRECTIVITY COMPUTATION)

*ENGINE CENTERLINE MICROPHONES*

ANGLE,  $\theta$ , 60. 90. 120.

COMPUTED OASPL 97.5 99.0 103.1

BAND FREQUENCY

1	50	80.2	83.9	86.7
2	63	85.0	88.9	93.0
3	80	84.7	89.7	93.4
4	100	80.4	86.9	87.5
5	125	80.7	83.9	83.4
6	160	77.4	78.2	79.4
7	200	80.2	75.6	86.7
8	250	78.6	79.9	92.1
9	315	81.4	84.1	90.4
10	400	81.4	85.8	89.9
11	500	81.1	85.8	85.6
12	630	81.8	85.6	87.0
13	800	85.5	86.7	91.7
14	1000	88.2	89.9	94.0
15	1250	81.6	84.2	87.6
16	1600	82.0	82.0	85.8
17	2000	82.4	80.4	85.4
18	2500	81.8	79.1	85.3
19	3150	80.9	79.1	85.4
20	4000	81.2	80.2	83.9
21	5000	81.1	81.3	83.5
22	6300	83.0	83.6	88.4
23	8000	88.3	83.3	87.4
24	10000	87.7	81.3	84.6
25	12500	82.7	85.9	89.6
26	16000	81.7	81.7	88.2
27	20000	80.3	81.3	82.4

FOLDOUT FRAME /

CONFIGURATION NO 300  
SPEED = 2069. RPM  
PERCENT SPEED = 54.0

LOSSLESS ARRAY

FT RADIUS WITH NO ATMOSPHERIC ATTENUATION  
POWER AND DIRECTIVITY COMPUTATIONS)

US

FOLDOUT FRAME

2

DATA OF 427. SUBSET NO. 13. READINGS 26 27 28

SIX DECIBELS HAVE BEEN SUBTRACTED FROM THE ORIGINAL DATA.  
 QCSEE OTW ENGINE TEST  
 BULK ABSORBER INLET  
 3000 FT. RUNWAY CONF.  
 ENGINE ALONE TEST

ORIGINAL PAGE IS  
 OF POOR QUALITY

SPL LOSSLESS ARRAY

FLYOVER PLANE DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERIC  
 (FOR POWER AND DIRECTIVITY COMPUTATION)

ANGLE *SP* 0. 30. 50. 60. 70. 80. 90. 100. 110. 120. 130.  
 COMPUTED DASPL 100.3 100.0 94.2 94.3 94.4 94.9 99.8 97.4 99.6 100.2 101.

BAND FREQUENCY

1	50	76.8	76.3	75.2	75.5	76.8	78.5	84.5	78.8	83.0	82.7	84.
2	63	82.8	80.8	78.8	82.2	84.5	85.2	88.2	85.0	90.3	89.3	88.
3	80	80.7	80.0	83.0	83.0	84.2	85.7	89.5	87.2	90.8	89.8	89.
4	100	81.2	81.7	81.5	78.7	83.2	82.7	87.3	84.3	86.3	87.0	87.
5	125	79.2	82.0	78.5	79.7	80.5	78.4	83.7	81.7	85.7	87.0	86.
6	160	77.7	78.5	77.7	78.7	78.4	77.2	82.0	80.0	83.4	85.2	85.
7	200	83.4	79.4	81.4	82.9	81.9	80.0	84.2	81.7	86.5	89.5	90.
8	250	79.7	80.0	76.3	78.4	79.9	80.0	83.2	80.5	87.0	89.9	92.
9	315	77.6	78.2	77.7	79.4	79.7	79.7	83.7	82.7	84.7	86.2	86.
10	400	74.6	77.1	78.2	77.4	78.7	79.2	86.1	84.6	86.9	85.7	87.
11	500	73.8	76.3	76.3	78.6	80.3	81.8	84.3	82.4	83.8	82.8	86.
12	630	74.4	76.6	76.1	77.4	81.4	82.9	85.6	81.4	83.4	82.9	86.
13	800	87.3	87.8	81.6	81.6	82.3	82.1	86.1	83.8	84.8	87.0	89.
14	1000	93.2	93.7	85.3	85.5	84.7	83.5	86.8	85.8	86.3	88.3	90.
15	1250	84.2	82.5	76.5	77.2	78.5	90.5	85.6	81.7	82.7	83.2	85.
16	1600	96.5	85.5	78.0	76.8	76.6	78.0	83.0	80.1	81.6	81.1	84.
17	2000	87.4	86.6	79.1	77.9	76.4	76.9	81.1	79.1	81.6	81.3	84.
18	2500	82.9	86.1	78.1	76.4	75.9	76.1	81.4	79.8	81.6	81.1	84.
19	3150	82.7	85.7	77.7	76.6	75.2	75.7	81.6	79.7	81.2	79.7	83.
20	4000	82.4	84.7	77.7	76.0	75.4	75.9	81.7	79.9	80.2	79.7	83.
21	5000	81.2	84.1	77.0	76.5	75.8	77.0	83.5	81.8	80.8	80.3	83.
22	6300	92.5	88.7	81.0	79.8	77.7	80.0	87.4	85.5	84.7	83.7	86.
23	8000	93.3	92.8	84.5	83.2	78.9	78.4	85.6	82.9	82.4	82.3	84.
24	10000	84.9	86.5	82.9	83.5	79.	78.3	84.8	82.3	81.6	81.9	84.
25	12500	81.3	79.7	75.8	76.7	77.1	82.4	89.5	87.1	86.7	88.1	89.
26	16000	85.4	82.3	75.5	74.7	73.5	77.1	86.4	84.1	85.3	87.2	89.
27	20000	84.8	86.4	77.4	77.1	75.9	76.5	83.3	78.5	83.4	83.8	84.

FOLDOUT FRAME /

CTED FROM THE ORIGINAL DATA.

CONFIGURATION NO 300

SPEED = 2069. RPM

PERCENT SPEED = 54.0

LOSSLESS ARRAY

0 FT RADIUS WITH NO ATMOSPHERIC ATTENUATION  
POWER AND DIRECTIVITY COMPUTATIONS)

ORIGINAL PAGE IS  
OF POOR QUALITY

0. 90. 100. 110. 120. 130. 150.

9 99.8 97.4 99.6 100.2 101.6 94.7

5	84.5	78.8	83.0	82.7	84.2	83.5
2	88.2	85.0	90.3	89.3	88.2	85.3
7	89.5	87.2	90.8	89.8	89.7	85.7
7	87.3	84.3	86.3	87.0	87.5	84.8
4	83.7	81.7	85.7	87.0	86.2	81.2
2	82.0	80.0	83.4	85.2	85.5	80.7
0	84.2	81.7	86.5	89.5	90.5	83.5
0	83.2	80.5	87.0	89.9	92.0	81.0
7	83.7	82.7	84.7	86.2	86.2	80.2
2	86.1	84.6	86.9	85.7	87.6	81.2
8	84.3	82.4	83.8	82.8	86.4	77.9
9	85.6	81.4	83.4	82.9	86.1	81.6
1	86.1	83.8	84.8	87.0	89.0	80.0
5	86.8	85.8	86.3	88.3	90.8	82.7
5	85.6	81.7	82.7	83.2	85.0	78.4
0	83.0	80.1	81.6	81.1	84.0	76.3
9	81.1	79.1	81.6	81.3	84.1	75.9
1	81.4	79.8	81.6	81.1	84.6	75.1
7	81.6	79.7	81.2	79.7	83.2	74.1
9	81.7	79.9	80.2	79.7	83.0	73.0
0	83.5	81.8	80.8	80.3	83.8	72.6
0	87.4	85.5	84.7	83.7	86.5	74.9
4	85.6	82.9	82.4	82.3	84.9	72.9
3	84.8	82.3	81.6	81.9	84.3	71.5
4	89.5	87.1	86.7	88.1	89.6	72.5
1	86.4	84.1	85.3	87.2	99.0	70.8
5	83.3	78.5	83.4	83.8	84.8	72.7

FOLDOUT FRAME

2

20

# SPL LOSSLESS DATA AT 100 FCOT RADIUS

ORIGINAL PAGE IS  
OF POOR QUALITY

QCSEE OTW ENGINE TEST

BULK ABSORBER INLET

3000 FT. RUNWAY CONF.

ENGINE ALCNE TEST

READING NUMBERS = 29 30 31

CONFIGURATION NC = 300

SPEED = 2439. RPM

TEMPERATURE = 48.0 F

RELATIVE HUMIDITY = 70.0 PC

*SIDELINE PLANE*

BOOM MICROPHONES - LOSSLESS DATA

MIC #	13	14	15	16	17
R	0.	17.	31.	43.	54.
THETA, $\theta_s$	90.	90.	90.	90.	90.
Z	106.	98.	91.	86.	81.
DISTANCE	91.	85.	82.	83.	86.
PHI, $\phi$	0.	11.	22.	31.	39.

INDEX FREQ

1	50.	80.6	81.0	80.6	81.8	83.2
2	63.	92.6	84.7	84.1	83.0	84.8
3	80.	84.8	87.7	88.1	98.7	89.2
4	100.	93.5	84.1	84.4	86.4	88.0
5	125.	83.5	83.5	83.9	85.2	84.7
6	160.	81.5	83.6	83.9	84.5	85.2
7	200.	83.8	85.6	86.6	87.5	88.8
8	250.	84.7	85.9	87.1	88.7	88.2
9	315.	83.7	85.4	85.8	86.9	88.0
10	400.	83.0	84.6	84.6	85.6	86.9
11	500.	82.5	83.4	85.1	86.1	86.5
12	630.	80.5	83.3	85.5	87.2	86.7
13	800.	81.4	83.8	84.8	86.1	86.9
14	1000.	82.4	85.0	86.0	87.3	87.1
15	1250.	94.1	86.0	87.2	88.5	88.1
16	1600.	77.7	79.7	81.1	81.7	82.7
17	2000.	77.7	79.8	80.2	81.3	82.2
18	2500.	78.5	81.1	80.4	81.5	83.4
19	3150.	77.9	80.4	79.9	81.4	82.5
20	4000.	77.7	81.0	79.7	80.8	82.7
21	5000.	77.7	80.8	79.8	81.8	83.1
22	6300.	79.4	82.5	80.3	83.2	84.3
23	8000.	79.9	84.1	80.5	84.5	85.9
24	10000.	80.2	83.8	79.7	84.9	85.8
25	12500.	80.6	84.1	77.7	84.4	85.3
26	16000.	78.2	82.9	75.6	83.7	84.4
27	20000.	72.9	75.5	68.4	77.8	77.3

OASPL 95.9 98.0 98.0 99.6 100.2

FOLDOUT FRAME

ORIGINAL PAGE IS  
OF POOR QUALITY

31

SPEED = 2439. RPM

PERCENT SPEED 65.0

FGK 8370

ATIVE HUMIDITY = 70.0 PC

BAROMETER = 29.33 IN HG

XM11 .408

TA

25° DOOR

S.S. 14

21

FOLDOUT FRAME

2

0



DATA OF 427. SUBSET NO. 14. READINGS 29 30 31

CCSEE OTW ENGINE TEST  
BULK ABSORBER INLET  
3000 FT. RUNWAY CNF.  
ENGINE ALONE TEST

*SPL* LOSSLESS ARRAY

*FLYOVER PLANE* DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERIC  
(FOR POWER AND DIRECTIVITY COMPUTATION)

*ENGINE CENTERLINE MICROPHONES*

ANGLE,  $\theta$  50. 90. 120.

COMPUTED CASPL 100.4 102.5 107.7

BAND FREQUENCY

1	50	85.9	87.0	92.4
2	63	87.9	89.5	93.9
3	80	90.4	94.2	96.2
4	100	88.0	92.7	94.0
5	125	84.5	86.7	90.2
6	160	80.4	83.4	86.0
7	200	81.6	80.6	93.6
8	250	83.2	85.4	95.7
9	315	85.9	90.9	97.2
10	400	86.3	91.6	95.8
11	500	85.1	90.3	90.9
12	630	84.1	89.6	93.3
13	800	83.8	87.8	93.7
14	1000	88.9	88.9	94.9
15	1250	90.4	89.6	96.1
16	1600	83.2	84.5	89.3
17	2000	84.3	84.1	89.5
18	2500	86.5	84.5	91.5
19	3150	85.5	84.5	91.6
20	4000	85.0	85.5	89.6
21	5000	84.7	85.6	89.1
22	6300	84.2	84.9	91.4
23	8000	86.2	88.1	91.7
24	10000	87.4	85.9	90.6
25	12500	86.0	85.7	89.1
26	16000	84.2	85.1	90.7
27	20000	81.7	80.9	89.2

22

FOLDOUT FRAME /

CONFIGURATION NO 300  
SPEED = 2439. RPM  
PERCENT SPEED = 65.0

LOSSLESS ARRAY

FT RADIUS WITH NO ATMOSPHERIC ATTENUATION  
(POWER AND DIRECTIVITY COMPUTATIONS)

185

22

FOLDOUT FRAME 2

DATA OF 427. SUBSET NO. 14. READINGS 29 30 31

SIX DECIBELS HAVE BEEN SUBTRACTED FROM THE ORIGINAL DATA.  
 OCSEE OTW ENGINE TEST  
 BULK ABSORBER INLET  
 3000 FT. RUNWAY CCNF.  
 ENGINE ALONE TEST

ORIGINAL PAGE IS  
 OF POOR QUALITY

SPL LOSSLESS ARRAY

FLYOVER PLANE

DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERIC  
 (FOR POWER AND DIRECTIVITY COMPUTATION)

ANGLE, $\theta$	0.	30.	50.	60.	70.	80.	90.	100.	110.	120.	130.
COMPUTED DASPL	101.8	100.9	97.3	97.0	98.0	98.0	102.5	102.0	103.4	104.9	104.

BAND FREQUENCY

BAND	FREQUENCY	0.	30.	50.	60.	70.	80.	90.	100.	110.	120.	130.
1	50	78.8	80.7	77.3	79.5	80.8	82.0	86.8	84.5	84.7	86.8	89.
2	63	81.5	80.5	80.3	82.0	83.3	84.3	88.8	88.0	88.8	89.3	90.
3	80	84.0	84.7	85.3	86.5	87.5	89.0	93.0	91.2	92.8	92.7	94.
4	100	84.0	87.0	81.0	85.5	86.5	86.7	91.0	90.3	91.0	92.3	93.
5	125	84.7	84.0	82.0	83.5	83.0	83.9	88.0	88.2	90.2	92.5	92.
6	160	78.2	80.9	81.2	81.7	83.5	81.9	87.4	86.2	87.4	90.7	91.
7	200	83.4	85.4	86.5	83.5	84.9	84.4	88.7	87.0	90.4	94.4	93.
8	250	81.9	83.7	82.4	84.0	86.4	86.7	88.5	86.9	92.5	97.7	96.
9	315	79.7	79.9	80.4	84.2	85.2	85.2	88.6	88.7	89.9	92.2	91.
10	400	76.4	79.4	81.9	82.9	83.5	84.9	89.7	90.1	92.4	92.1	92.
11	500	75.6	77.9	80.3	83.4	85.6	86.3	88.8	87.6	89.4	88.6	89.
12	630	76.9	78.8	80.3	81.3	84.9	86.9	89.1	86.4	88.1	86.8	88.
13	800	81.3	80.8	80.5	81.1	83.6	84.6	87.5	86.0	87.3	88.1	89.
14	1000	91.8	89.8	85.8	83.5	85.0	83.8	88.0	86.5	89.3	90.5	89.
15	1250	95.4	92.9	88.2	85.9	86.6	83.4	89.2	87.4	91.2	91.7	89.
16	1600	87.6	85.6	80.5	79.0	79.5	79.3	85.0	83.8	85.6	84.8	85.
17	2000	89.1	87.9	82.1	80.4	79.9	79.3	83.9	84.3	85.8	86.1	85.
18	2500	91.3	90.1	84.3	83.1	82.5	80.5	84.8	86.5	88.0	88.8	89.
19	3150	88.1	88.3	82.3	81.4	81.6	79.1	85.0	86.0	88.1	86.1	86.
20	4000	87.3	87.4	81.4	80.6	81.4	79.5	84.8	85.8	86.6	86.1	86.
21	5000	86.9	87.2	81.0	80.9	81.4	79.2	86.1	86.9	86.4	86.0	86.
22	6300	87.8	87.4	81.7	81.0	82.0	79.9	87.7	88.2	87.2	86.4	86.
23	8000	91.3	89.1	83.4	81.6	81.8	80.3	88.7	88.8	87.6	86.9	85.
24	10000	89.7	89.9	86.7	82.5	83.3	81.2	88.3	89.3	88.5	88.6	87.
25	12500	85.1	84.7	82.6	82.3	81.2	81.0	87.5	87.9	87.4	88.7	86.
26	16000	85.0	82.9	79.8	78.5	78.2	79.3	87.0	88.8	89.1	90.5	90.
27	20000	86.9	85.9	81.0	79.4	78.7	77.8	84.4	84.4	85.5	85.7	86.

23

FOLDOUT FRAME /

ORIGINAL PAGE IS  
OF POOR QUALITY

ED FROM THE ORIGINAL DATA.

CONFIGURATION NO 300  
SPEED = 2439. RPM  
PERCENT SPEED = 65.0

# LOSSLESS ARRAY

0 FT RADIUS WITH NO ATMOSPHERIC ATTENUATION  
(POWER AND DIRECTIVITY COMPUTATIONS)

90. 100. 110. 120. 130. 150.  
102.5 102.0 103.4 104.9 104.8 100.4

86.8	84.5	84.7	86.8	89.2	93.2
88.8	88.0	88.8	89.3	90.5	90.7
93.0	91.2	92.8	92.7	94.3	91.3
91.0	90.3	91.0	92.3	93.0	90.2
88.0	88.2	90.2	92.9	92.4	88.9
87.4	86.2	87.4	90.7	91.2	86.0
88.7	87.0	90.4	94.4	93.9	87.0
88.5	86.9	92.5	97.7	96.5	87.4
88.6	88.7	89.9	92.2	91.1	86.2
89.7	90.1	92.4	92.1	92.2	85.9
88.8	87.6	89.4	88.6	89.9	83.8
89.1	86.4	88.1	86.8	88.3	84.1
87.5	86.0	87.3	88.1	89.1	83.3
88.0	86.5	89.3	90.5	89.5	83.8
89.2	87.4	91.2	91.7	89.7	85.2
85.0	83.8	85.6	84.8	85.1	80.5
83.9	84.3	85.8	86.1	85.9	81.1
84.8	86.5	88.0	88.8	89.1	82.5
85.0	86.0	88.1	86.1	86.3	79.1
84.8	85.8	86.6	86.1	86.1	78.3
86.1	86.9	86.4	86.0	86.0	76.5
87.7	88.2	87.2	86.4	86.5	76.5
88.7	88.8	87.6	86.9	85.9	75.4
88.3	89.3	88.5	88.6	87.9	75.9
87.5	87.9	87.4	88.7	86.8	71.1
87.0	88.8	89.1	90.5	90.3	75.6
84.4	84.4	85.5	85.7	86.1	83.3

SPL

## LOSSLESS DATA AT 100 FCCT RADIUS

QCSEE OTW ENGINE TEST

BULK ABSORBER INLET

3000 FT. RUNWAY CONF.

ENGINE ALONE TEST

READING NUMBERS = 32 33 34

CONFIGURATION NC = 300

SPEED = 3039. RPM

TEMPERATURE = 49.0 F

RELATIVE HUMIDITY = 70.0 PC

SIDELINE PLANE

BOOM MICROPHONES - LOSSLESS DATA

MIC #	13	14	15	16	17
R	0.	17.	31.	43.	54.
THETA, $\theta_s$	90.	90.	90.	90.	90.
Z	106.	98.	91.	86.	81.
DISTANCE	91.	85.	82.	83.	86.
PHI, $\phi$	0.	11.	22.	31.	39.

INDEX	FREQ					
1	50.	85.3	87.5	86.9	87.8	88.0
2	63.	87.0	90.5	88.6	89.0	89.5
3	80.	89.0	91.7	90.1	92.5	92.2
4	100.	90.6	91.9	89.8	91.0	91.5
5	125.	89.5	91.6	91.1	92.0	91.2
6	160.	89.0	91.4	90.9	92.2	92.5
7	200.	90.0	91.7	91.9	92.5	93.7
8	250.	90.0	92.4	92.8	93.4	93.5
9	315.	89.2	91.6	92.0	93.2	93.4
10	400.	89.5	90.9	92.1	92.7	92.5
11	500.	90.2	89.8	91.8	92.6	92.2
12	630.	87.4	89.3	91.1	92.7	92.2
13	800.	87.2	90.1	90.8	92.1	92.1
14	1000.	85.6	88.8	89.7	91.4	90.9
15	1250.	87.9	90.2	90.5	91.6	92.1
16	1600.	88.2	90.0	90.6	91.3	91.8
17	2000.	93.1	85.5	86.0	87.2	86.9
18	2500.	85.2	87.6	87.3	88.4	88.2
19	3150.	85.7	88.2	87.3	89.0	89.0
20	4000.	85.3	88.3	86.7	87.8	88.8
21	5000.	84.6	87.6	85.6	88.2	88.4
22	6300.	85.1	88.2	85.7	89.0	88.7
23	8000.	83.1	87.5	83.3	87.9	87.8
24	10000.	83.8	87.6	82.6	88.8	88.1
25	12500.	93.9	87.0	80.6	87.8	87.5
26	16000.	93.4	86.7	79.1	88.1	86.7
27	20000.	78.4	81.8	76.8	83.0	82.3

OASPL 101.7 104.0 103.6 105.1 105.1

FOLDOUT FRAME /

34

SPEED = 3039. RPM

PERCENT SPEED 81.0

FGK 13308

ATIVE HUMIDITY = 70.0 PC

BAROMETER = 29.34 IN HG XM11 .552

ATA

25° Door

SS, 15

24

FOLDOUT FRAME 2

DATA OF 427. SUBSET NO. 15. READINGS 32 33 34

QCSEE OTW ENGINE TEST  
BULK ABSORBER INLET  
3000 FT. RUNWAY CNF.  
ENGINE ALONE TEST

SPL LOSSLESS ARRAY

FLYOVER PLANE DATA AT 100.0 FT RADIUS WITH NO ATMOSPHER  
(FOR POWER AND DIRECTIVITY COMPUTA  
ENGINE CENTERLINE MICROPHONES

ANGLE  $\theta$  60. 90. 120.

COMPUTED CASPL 105.8 108.8 113.2

BAND FREQUENCY

1	50	88.9	95.2	98.2
2	63	91.2	96.4	98.5
3	80	92.7	97.7	100.2
4	100	90.7	96.7	98.5
5	125	89.4	95.5	94.9
6	160	86.5	91.5	93.4
7	200	85.4	89.2	99.1
8	250	87.7	93.1	105.1
9	315	91.6	97.9	104.1
10	400	93.1	99.8	102.8
11	500	91.8	99.6	99.1
12	630	90.0	95.8	99.8
13	800	90.3	95.0	99.2
14	1000	89.5	93.9	98.5
15	1250	93.2	92.6	100.2
16	1600	94.0	92.5	101.5
17	2000	89.8	89.6	93.1
18	2500	94.8	90.8	95.3
19	3150	96.3	91.0	97.6
20	4000	94.7	92.3	94.7
21	5000	92.6	91.5	93.5
22	6300	91.9	90.3	95.3
23	8000	90.7	90.4	93.4
24	10000	88.8	88.6	91.5
25	12500	88.4	88.7	91.3
26	16000	88.3	88.0	92.4
27	20000	84.6	90.5	92.1

25

FOLDOUT FRAME /

CONFIGURATION NO 300  
SPEED = 3039. RPM  
PERCENT SPEED = 81.0

LOSSLESS ARRAY

0 FT RADIUS WITH NO ATMOSPHERIC ATTENUATION  
(POWER AND DIRECTIVITY COMPUTATIONS)

PHONES

25

FOLDOUT FRAME

2



DATA OF 427. SUBSET NO. 15. READINGS 32 33 34

SIX DECIBELS HAVE BEEN SUBTRACTED FROM THE ORIGINAL DATA.

QCSEE CTW ENGINE TEST

BULK ABSORBER INLET

3000 FT. RUNWAY CCNF.

ENGINE ALONE TEST

ORIGINAL PAGE IS  
OF POOR QUALITY.

SPL

LOSSLESS ARRAY

FLYOVER PLANE

DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERIC  
(FOR POWER AND DIRECTIVITY COMPUTATION)

ANGLE,  $\theta$  0. 30. 50. 60. 70. 80. 90. 100. 110. 120. 130.

COMPUTED OASPL 104.6 103.5 102.5 102.6 103.0 103.9 108.7 107.5 110.1 111.1 111.2

BAND FREQUENCY

1	50	81.7	82.5	85.7	85.2	85.2	84.8	90.3	88.0	90.8	93.5	96.3
2	63	84.2	83.3	86.0	87.0	87.8	87.3	91.8	91.2	92.2	96.2	96.5
3	80	88.3	86.2	87.5	88.5	89.8	90.7	94.8	94.2	96.5	98.5	100.3
4	100	90.0	85.5	89.0	88.3	91.2	92.3	93.5	94.7	97.3	98.7	99.8
5	125	87.4	87.5	87.9	85.2	91.5	89.7	94.7	93.9	97.5	99.4	100.5
6	160	85.7	86.4	87.0	88.2	90.0	89.5	94.2	92.5	95.2	98.2	98.4
7	200	86.0	87.4	87.7	88.0	88.4	90.4	94.5	94.2	97.5	100.5	100.0
8	250	84.9	87.5	86.4	89.4	91.4	93.5	96.9	96.0	101.0	103.0	102.2
9	315	83.1	86.2	87.7	90.6	90.6	91.2	96.4	96.2	98.4	100.1	98.2
10	400	80.7	85.7	87.9	88.4	89.6	91.2	98.6	97.7	99.6	100.1	98.7
11	500	79.4	84.6	87.1	89.8	90.4	92.9	98.1	95.6	96.6	98.1	97.4
12	630	81.4	84.1	86.9	88.6	90.1	91.9	97.3	94.9	97.3	96.1	96.6
13	800	83.8	84.0	86.5	88.0	89.8	90.3	94.5	93.3	96.0	95.3	95.6
14	1000	87.0	85.8	85.3	86.7	87.8	88.7	92.7	91.8	95.0	94.7	95.2
15	1250	95.1	91.7	89.7	89.7	88.6	89.2	94.7	93.6	96.6	95.7	95.1
16	1600	97.5	93.5	91.0	91.1	88.8	90.3	95.5	94.8	97.5	95.8	96.1
17	2000	89.9	89.1	86.4	85.9	85.6	85.1	90.1	89.3	90.8	90.6	89.9
18	2500	93.6	92.6	90.8	89.5	89.0	87.6	92.5	92.1	94.1	92.1	92.1
19	3150	95.3	94.4	92.4	90.9	90.3	88.9	93.1	92.8	95.8	93.3	93.8
20	4000	93.9	93.7	91.2	89.6	88.7	88.9	93.3	91.6	93.7	91.6	92.2
21	5000	92.1	92.0	89.5	88.3	87.5	88.1	93.7	89.9	92.8	91.5	92.2
22	6300	91.6	91.9	89.4	88.4	87.2	88.4	93.7	90.2	92.9	91.9	92.7
23	8000	89.4	88.8	87.0	86.2	85.0	86.2	91.7	88.7	90.9	89.4	90.4
24	10000	88.4	88.3	86.1	85.8	84.3	86.1	92.4	89.2	91.2	89.0	90.2
25	12500	86.5	85.9	84.3	83.6	81.9	84.6	92.2	90.4	90.9	89.7	90.2
26	16000	87.0	85.0	83.4	82.4	81.2	84.5	90.9	87.6	92.1	91.2	92.5
27	20000	88.1	87.7	85.0	84.6	85.2	85.8	87.8	88.4	90.1	94.8	94.6

216

FOLDOUT FRAME /

ED FROM THE ORIGINAL DATA.

CONFIGURATION NO 300  
 SPEED = 3039. RPM  
 PERCENT SPEED = 81.0

LOSSLESS ARRAY

ORIGINAL PAGE IS  
 OF POOR QUALITY

FT RADIUS WITH NO ATMOSPHERIC ATTENUATION  
 POWER AND DIRECTIVITY COMPUTATIONS)

90. 100. 110. 120. 130. 150.

108.7 107.5 110.1 111.1 111.2 106.5

90.3	88.0	90.8	93.5	96.3	100.8
91.8	91.2	92.2	96.2	96.5	100.8
94.8	94.2	96.5	98.5	100.3	96.3
93.5	94.7	97.3	98.7	99.8	92.8
94.7	93.9	97.5	99.4	100.5	92.4
94.2	92.5	95.2	98.2	98.4	92.2
94.5	94.2	97.5	100.5	100.0	91.7
96.9	96.0	101.0	103.0	102.2	91.2
96.4	96.2	98.4	100.1	98.2	91.2
98.6	97.7	99.6	100.1	98.7	90.9
98.1	95.6	96.6	98.1	97.4	90.3
97.3	94.9	97.3	96.1	96.6	88.8
94.5	93.3	96.0	95.3	95.6	88.0
92.7	91.8	95.0	94.7	95.2	88.0
94.7	93.6	96.6	95.7	95.1	87.2
95.5	94.8	97.5	95.8	96.1	87.8
90.1	89.3	90.8	90.6	89.9	83.9
92.5	92.1	94.1	92.1	92.1	82.6
93.1	92.8	95.8	93.3	93.8	82.8
93.3	91.6	93.7	91.6	92.2	82.1
93.7	89.9	92.8	91.5	92.2	80.0
93.7	90.2	92.9	91.9	92.7	79.9
91.7	88.7	90.9	89.4	90.4	75.6
92.4	89.2	91.2	89.0	90.2	73.0
92.2	90.4	90.9	89.7	90.2	70.3
90.9	87.6	92.1	91.2	92.5	75.6
87.8	88.4	90.1	94.8	94.6	84.3

26

FOLDOUT FRAME 2

# SPL LOSSLESS DATA AT 100 FCCT RADIUS

QCSEE CTW ENGINE TEST

BULK ABSORBER INLET

3000 FT. RUNWAY CONF.

ENGINE ALCNE TEST

READING NUMBERS = 35 36 37

CONFIGURATION NC = 300

SPEED = 3227. RPM

TEMPERATURE = 50.0 F

RELATIVE HUMIDITY = 68.0 PC

*SIDELINE PLANE*

BOOM MICROPHONES - LOSSLESS DATA

MIC #	13	14	15	16	17
R	0.	17.	31.	43.	54.
THETA, $\theta_s$	90.	90.	90.	90.	90.
Z	106.	98.	91.	86.	81.
DISTANCE	91.	85.	82.	83.	86.
PHI, $\phi$	0.	11.	22.	31.	39.

INDEX	FREQ					
1	50.	90.0	89.4	88.9	90.5	90.0
2	63.	91.0	91.5	91.6	91.8	91.2
3	80.	91.8	93.1	94.1	95.5	94.2
4	100.	92.1	92.7	92.9	93.5	94.0
5	125.	92.5	93.6	95.1	94.4	94.2
6	160.	92.2	92.7	94.8	93.7	93.8
7	200.	92.3	94.6	95.1	95.7	96.2
8	250.	93.0	93.2	95.3	95.4	95.5
9	315.	92.7	93.9	95.0	95.2	95.9
10	400.	92.5	92.8	94.0	94.9	95.9
11	500.	91.4	92.3	93.8	94.7	94.9
12	630.	89.5	91.3	93.1	94.6	94.9
13	800.	89.4	92.3	93.2	94.6	94.4
14	1000.	88.2	90.5	91.7	93.6	94.1
15	1250.	88.8	90.2	90.5	92.3	93.0
16	1600.	92.5	94.2	94.4	94.5	94.8
17	2000.	86.6	87.8	87.8	88.9	89.7
18	2500.	87.0	88.2	88.4	89.4	89.9
19	3150.	89.4	91.1	90.6	91.2	92.0
20	4000.	87.2	89.0	88.2	89.3	90.3
21	5000.	87.8	89.8	88.4	90.4	90.7
22	6300.	87.8	90.1	87.5	91.0	90.5
23	8000.	85.8	89.0	85.1	89.1	89.7
24	10000.	86.0	88.7	83.6	89.3	89.2
25	12500.	85.9	88.5	81.6	88.9	88.7
26	16000.	85.3	88.2	80.3	89.4	88.0
27	20000.	82.6	83.6	78.1	85.3	84.2

OASPL 104.4 105.8 106.3 107.2 107.4

FOLDOUT FRAME

37

SPEED = 3227. RPM

PERCENT SPEED

86.0

FGK 15815

ATIVE HUMIDITY = 68.0 PC

BAROMETER = 29.34 IN HG

XM11 629

TA

25° DOOR

S.S. 16

27

FOLDOUT FRAME

2

DATA OF 427. SUBSET NO. 16. READINGS 35 36 37

CCSEE OTW ENGINE TEST  
BULK ABSORBER INLET  
3000 FT. RUNWAY CCNF.  
ENGINE ALONE TEST

ORIGINAL PAGE IS  
OF POOR QUALITY

SPL LOSSLESS ARRAY

FLYOVER PLANE

DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERIC  
(FOR POWER AND DIRECTIVITY COMPUTATION)

ENGINE CENTERLINE MICROPHONES

ANGLE,  $\theta$  60. 90. 120.

COMPUTED OASPL 107.5 110.3 115.4

BAND FREQUENCY

1	50	92.9	94.5	101.4
2	63	93.7	95.7	100.7
3	80	94.9	98.9	101.9
4	100	93.7	98.0	100.9
5	125	93.5	97.0	100.4
6	160	90.5	95.0	96.9
7	200	89.1	91.2	100.6
8	250	89.7	92.9	106.7
9	315	93.9	98.4	106.7
10	400	94.9	101.6	105.9
11	500	94.8	100.3	102.1
12	630	93.1	96.8	101.8
13	800	92.3	97.2	102.0
14	1000	92.4	96.4	100.4
15	1250	92.8	94.4	99.9
16	1600	97.7	97.0	102.8
17	2000	91.1	92.1	96.3
18	2500	93.2	92.5	96.3
19	3150	97.5	94.6	100.6
20	4000	93.1	94.3	96.2
21	5000	93.8	95.0	95.7
22	6300	91.4	92.8	96.8
23	8000	90.7	93.1	95.4
24	10000	88.5	90.1	92.4
25	12500	88.1	90.3	92.3
26	16000	88.2	90.0	93.0
27	20000	92.4	93.0	94.5

28

FOLDOUT FRAME /

CONFIGURATION NO 300  
 SPEED = 3227. RPM  
 PERCENT SPEED = 86.0

LOSSLESS ARRAY

ORIGINAL PAGE IS  
 OF POOR QUALITY

FT RADIUS WITH NO ATMOSPHERIC ATTENUATION  
 POWER AND DIRECTIVITY COMPUTATIONS)

28

28

FOLDOUT FRAME 2

DATA OF 427. SUBSET NO. 16. READINGS 35 36 37

SIX DECIBELS HAVE BEEN SUBTRACTED FROM THE ORIGINAL DATA.

QCSEE OTW ENGINE TEST  
PULK ABSORBER INLET  
3000 FT. RUNWAY CNF.  
ENGINE ALONE TEST

ORIGINAL PAGE IS  
OF POOR QUALITY

SPL LOSSLESS ARRAY

FLYOVER PLANE DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERIC  
(FOR POWER AND DIRECTIVITY COMPUTATION)

		ANGLE, $\theta$	0.	30.	50.	60.	70.	80.	90.	100.	110.	120.	130.
COMPUTED CASPL		104.2	104.5	104.5	104.7	105.5	106.6	109.8	108.6	112.4	113.4	113.6	
RAND FREQUENCY													
1	50	82.7	84.8	86.8	86.7	86.7	87.2	90.5	89.7	95.0	95.3	99.2	
2	63	85.5	85.8	88.5	87.5	89.0	88.8	94.0	91.8	96.7	97.2	100.2	
3	80	88.5	86.0	88.8	91.2	91.3	91.7	96.3	94.7	98.7	99.8	102.0	
4	100	86.7	87.2	87.2	90.2	91.5	92.5	94.8	95.2	98.8	100.3	102.5	
5	125	87.2	88.4	89.4	91.2	92.4	92.9	95.9	96.5	100.4	102.0	103.5	
6	160	86.0	88.2	89.2	91.2	92.2	92.4	95.9	94.9	99.5	101.5	102.4	
7	200	85.7	89.2	91.0	90.9	91.2	92.7	97.2	96.2	99.7	102.4	103.0	
8	250	87.5	88.0	89.5	91.9	94.0	94.5	97.5	95.2	101.4	102.9	103.7	
9	315	84.7	88.6	90.1	94.1	94.4	93.6	97.6	96.7	100.2	102.4	101.1	
10	400	82.1	88.2	90.1	91.9	93.1	95.4	99.4	98.7	100.6	102.1	101.6	
11	500	81.4	86.6	90.4	93.6	95.1	96.6	96.9	96.9	99.1	101.3	99.4	
12	630	82.9	85.9	88.9	91.6	94.1	95.3	97.3	95.4	99.3	99.6	98.8	
13	800	93.3	86.5	89.1	90.8	93.3	95.0	96.5	94.8	98.8	98.8	98.1	
14	1000	95.0	87.2	88.0	89.0	90.8	92.5	94.8	93.3	98.2	98.3	97.2	
15	1250	88.9	89.4	89.1	89.1	89.6	90.7	94.7	92.7	97.6	97.7	95.4	
16	1600	97.6	96.5	96.0	93.1	94.0	92.8	98.3	96.3	100.6	101.0	99.5	
17	2000	89.1	88.8	87.9	87.8	87.6	89.3	92.8	90.9	94.6	95.1	92.9	
18	2500	92.5	92.8	91.3	89.0	89.1	90.0	93.5	92.0	95.3	94.8	92.8	
19	3150	97.1	96.8	95.8	92.6	92.3	92.6	96.1	94.6	98.9	97.6	95.9	
20	4000	91.5	91.4	91.1	88.9	88.9	90.7	93.9	92.2	95.6	94.9	93.4	
21	5000	92.3	93.2	92.1	90.8	89.7	91.8	94.8	92.8	95.7	95.5	94.2	
22	6300	91.2	92.2	90.5	89.9	88.7	91.2	95.2	92.9	95.6	95.1	94.2	
23	8000	88.9	89.2	88.4	87.5	86.0	89.2	92.9	90.7	92.7	92.5	91.9	
24	10000	88.1	88.6	87.1	87.3	85.3	88.8	92.8	90.9	92.5	91.8	91.3	
25	12500	86.0	85.7	84.9	85.8	83.1	87.7	92.2	90.4	92.5	91.8	90.8	
26	16000	86.2	85.0	83.7	84.6	82.6	86.9	91.0	89.9	93.7	93.1	92.8	
27	20000	87.8	87.2	85.7	85.5	86.5	86.7	88.5	89.2	96.3	96.4	96.5	

ED FROM THE ORIGINAL DATA.

CONFIGURATION NO 300

SPEED = 3227. RPM

PERCENT SPEED = 86.0

LOSSLESS ARRAY

ORIGINAL PAGE IS  
OF POOR QUALITY

0 FT RADIUS WITH NO ATMOSPHERIC ATTENUATION  
POWER AND DIRECTIVITY COMPUTATIONS)

90. 100. 110. 120. 130. 150.

109.8 108.6 112.4 113.4 113.6 109.6

90.5	89.7	95.0	95.3	99.2	102.7
94.0	91.8	96.7	97.2	100.2	102.7
96.3	94.7	98.7	99.8	102.0	101.7
94.8	95.2	98.8	100.3	102.5	98.0
95.9	96.5	100.4	102.0	103.5	94.7
95.9	94.9	99.5	101.5	102.4	94.4
97.2	96.2	99.7	102.4	103.0	95.5
97.5	95.2	101.4	102.9	103.7	95.0
97.6	96.7	100.2	102.4	101.1	94.6
99.4	98.7	100.6	102.1	101.6	92.1
96.9	96.9	99.1	101.3	99.4	93.3
97.3	95.4	99.3	99.6	98.8	91.4
96.5	94.8	98.8	98.8	98.1	91.5
94.8	93.3	98.2	98.3	97.2	90.5
94.7	92.7	97.6	97.7	95.4	88.6
98.3	96.3	100.6	101.0	99.5	92.1
92.8	90.9	94.6	95.1	92.9	87.1
93.5	92.0	95.3	94.8	92.8	85.1
96.1	94.6	98.9	97.6	95.9	85.6
93.9	92.2	95.6	94.9	93.4	84.2
94.8	92.8	95.7	95.5	94.2	82.8
95.2	92.9	95.6	95.1	94.2	81.7
92.9	90.7	92.7	92.5	91.9	77.8
92.8	90.9	92.5	91.8	91.3	77.1
92.2	90.4	92.5	91.8	90.8	80.7
91.0	89.9	93.7	93.1	92.8	85.8
88.5	89.2	96.3	96.4	96.5	96.6



# *SPL* LOSSLESS DATA AT 100 FCOT RADIUS

QCSEE OTW ENGINE TEST

BULK ABSORBER INLET

3000 FT. RUNWAY CONF.

ENGINE ALONE TEST

ORIGINAL PAGE IS  
OF POOR QUALITY

READING NUMBERS = 38 39 40

CONFIGURATION NC = 300

SPEED = 3377. RPM

TEMPERATURE = 51.0 F

RELATIVE HUMIDITY = 63.0 PC

## *SIDELINE PLANS* BOOM MICROPHONES - LOSSLESS DATA

MIC #	13	14	15	16	17
R	0.	17.	31.	43.	54.
THETA, $\theta_s$	90.	90.	90.	90.	90.
Z	106.	98.	91.	86.	81.
DISTANCE	91.	85.	82.	83.	86.
PHI, $\phi$	0.	11.	22.	31.	39.

INDEX	FREQ					
1	50.	91.0	90.0	89.4	90.2	91.2
2	63.	92.3	93.0	91.6	91.2	93.3
3	80.	93.5	93.9	94.1	95.2	95.8
4	100.	92.0	93.2	93.3	94.4	94.0
5	125.	93.0	94.7	94.9	95.4	95.3
6	160.	92.7	93.9	94.8	95.2	95.5
7	200.	93.3	94.4	96.1	96.5	96.7
8	250.	93.7	94.6	96.3	95.9	96.8
9	315.	92.8	94.6	95.8	96.2	97.0
10	400.	93.0	94.1	95.8	96.2	96.5
11	500.	93.2	93.4	94.3	96.1	96.4
12	630.	90.5	92.8	94.1	96.1	96.4
13	800.	90.7	93.5	94.0	95.6	96.2
14	1000.	89.6	91.6	92.7	94.3	94.8
15	1250.	89.8	91.2	91.4	93.3	94.1
16	1600.	94.3	95.2	95.9	95.7	96.8
17	2000.	87.4	88.8	89.3	90.3	91.2
18	2500.	87.4	88.9	88.8	89.9	90.7
19	3150.	99.9	91.9	91.1	91.9	93.2
20	4000.	87.7	89.5	88.9	90.2	91.3
21	5000.	88.4	90.2	89.2	90.9	91.8
22	6300.	88.5	90.7	88.3	91.2	91.6
23	8000.	85.8	89.5	85.9	89.7	90.1
24	10000.	86.3	89.3	84.3	90.0	90.3
25	12500.	86.5	88.9	82.5	89.3	89.6
26	16000.	86.2	89.0	81.1	89.8	89.1
27	20000.	83.1	84.5	79.4	85.8	85.2

OASPL 105.3 106.7 107.0 108.0 108.6

FOLDOUT FRAME

ORIGINAL PAGE IS  
OF POOR QUALITY

40

SPEED = 3377. RPM

PERCENT SPEED

90.0

FGK 16738

ATIVE HUMIDITY = 63.0 PC

BAROMETER = 29.33 IN HG

XM11 .659

TA

25° DOOR

S.S. 17

30

FOLDOUT FRAME 2

DATA OF 427. SURSET NO. 17. READINGS 38 39 40

QCSEE OTW ENGINE TEST  
PULK ABSORBER INLET  
3000 FT. RUNWAY CCNF.  
ENGINE ALONE TEST

ORIGINAL PAGE IS  
OF POOR QUALITY

SPL LCSSLESS ARR A

FLYOVER PLANE

DATA AT 100.0 FT RADIUS WITH NO ATMOSPHE  
(FOR POWER AND DIRECTIVITY COMPUT

ENGINE CENTERLINE MICROPHONES

ANGLE  $\theta$  60. 90. 120.

COMPUTED OASPL 108.1 110.7 116.4

BAND FREQUENCY

1	50	93.4	93.7	101.7
2	63	94.5	97.0	103.0
3	80	95.7	99.0	104.2
4	100	94.7	97.9	103.2
5	125	94.4	97.2	101.9
6	160	91.5	94.7	99.2
7	200	89.4	91.6	100.4
8	250	90.7	93.9	105.2
9	315	94.9	98.1	106.9
10	400	96.4	101.6	106.4
11	500	96.3	100.6	103.6
12	630	94.5	98.0	102.6
13	800	93.8	98.3	103.5
14	1000	93.5	97.4	102.5
15	1250	93.4	95.4	100.9
16	1600	98.7	97.8	103.5
17	2000	92.1	93.5	98.0
18	2500	93.2	93.2	97.7
19	3150	96.3	95.8	101.5
20	4000	93.2	94.7	97.3
21	5000	93.6	95.4	96.6
22	6300	91.1	93.4	98.1
23	8000	90.5	93.5	96.2
24	10000	88.4	91.1	93.6
25	12500	87.5	90.6	93.2
26	16000	87.7	90.6	94.7
27	20000	92.4	93.3	103.4

31

FOLDOUT FRAME 1

CONFIGURATION NO 300  
SPEED = 3377. RPM  
PERCENT SPEED = 90.0

LOSSLESS ARRAY

0.0 FT RADIUS WITH NO ATMOSPHERIC ATTENUATION  
(POWER AND DIRECTIVITY COMPUTATIONS)

ORIGINAL PAGE IS  
OF POOR QUALITY

31

FOLDOUT FRAME

2

SIX DECIBELS HAVE BEEN SUBTRACTED FROM THE ORIGINAL DATA.

QCSSE OTW ENGINE TEST  
 BULK ABSORBER INLET  
 3000 FT. RUNWAY CCNF.  
 ENGINE ALONE TEST

ORIGINAL PAGE IS  
 OF POOR QUALITY

SPL LOSSLESS ARRAY

FLYOVER PLANE DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERIC  
 (FOR POWER AND DIRECTIVITY COMPUTATION)

ANGLE,  $\theta$ , 0. 30. 50. 60. 70. 80. 90. 100. 110. 120. 130.

COMPUTED OASPL 107.0 104.1 104.9 105.1 106.8 107.0 111.6 110.3 112.5 114.5 114.7

## BAND FREQUENCY

1	50	83.3	84.8	85.0	88.0	89.7	88.7	92.5	92.2	94.3	97.7	99.8
2	63	86.8	86.5	88.3	90.5	91.5	90.0	96.2	94.7	95.5	98.5	101.2
3	80	88.8	88.5	90.0	91.5	92.5	92.8	97.3	96.5	98.5	101.0	102.5
4	100	87.3	88.8	88.8	91.2	92.8	92.2	97.3	96.5	98.5	101.2	104.2
5	125	88.9	89.2	90.7	90.7	93.4	93.2	97.2	97.2	100.0	102.5	103.5
6	160	88.0	88.9	90.7	91.7	93.4	92.5	98.0	96.2	98.2	103.4	104.5
7	200	86.9	90.0	91.0	91.0	92.7	93.4	98.4	98.0	100.0	103.7	103.5
8	250	88.5	89.0	90.7	92.1	94.2	95.0	98.0	96.7	102.0	103.9	104.7
9	315	85.9	88.9	90.9	94.4	95.7	94.1	98.4	97.6	99.9	104.1	102.7
10	400	84.6	88.6	91.2	92.4	94.9	96.1	100.7	99.4	101.4	103.6	102.1
11	500	83.6	87.6	91.4	94.3	95.8	96.1	99.6	98.8	99.9	103.6	100.4
12	630	84.3	87.3	90.3	91.9	94.9	94.8	99.8	98.1	99.9	101.8	99.8
13	800	84.1	86.5	89.3	90.8	94.6	94.3	98.6	98.0	100.5	100.8	99.1
14	1000	87.2	86.8	88.7	89.7	92.3	93.2	97.0	95.8	98.8	99.5	99.0
15	1250	93.2	88.7	89.7	89.4	91.2	91.6	96.4	94.7	96.9	98.2	96.4
16	1600	102.0	96.7	98.2	95.0	96.0	96.8	100.0	97.3	99.6	104.0	100.0
17	2000	91.6	88.3	88.6	88.3	99.8	90.1	94.8	92.9	94.4	96.4	95.0
18	2500	95.0	91.0	89.7	88.8	90.8	90.3	95.0	93.5	95.0	95.5	94.0
19	3150	99.1	95.6	94.0	92.5	93.1	92.3	97.3	96.3	98.7	98.7	97.0
20	4000	94.0	90.5	89.8	88.8	90.5	90.6	95.3	94.0	96.0	96.1	95.0
21	5000	95.3	91.8	91.3	90.1	91.3	91.6	96.1	94.4	95.9	96.3	95.0
22	6300	93.4	90.4	89.7	88.7	90.0	91.1	96.4	94.2	95.4	95.7	95.0
23	8000	91.4	87.4	87.2	86.9	87.8	88.8	94.3	92.1	93.1	93.3	93.0
24	10000	90.4	86.0	86.1	86.6	86.7	88.0	94.3	92.0	92.3	92.7	92.0
25	12500	89.4	83.3	84.0	85.0	84.7	87.4	93.8	90.9	92.4	92.7	92.0
26	16000	88.3	82.0	82.5	83.9	83.9	87.0	93.3	91.2	93.9	94.6	93.0
27	20000	89.7	85.1	86.2	87.4	87.4	88.2	97.7	97.0	98.2	98.2	97.0

ACTED FROM THE ORIGINAL DATA.

CONFIGURATION NO 300  
SPEED = 3377. RPM  
PERCENT SPEED = 90.0

LOSSLESS ARRAY

ORIGINAL PAGE IS  
OF POOR QUALITY

0.0 FT RADIUS WITH NO ATMOSPHERIC ATTENUATION  
(POWER AND DIRECTIVITY COMPUTATIONS)

0. 90. 100. 110. 120. 130. 150.

0.0 111.6 110.3 112.5 114.5 114.7 111.3

0.7	92.5	92.2	94.3	97.7	99.8	105.7
0.0	96.2	94.7	95.5	98.5	101.2	104.3
0.8	97.3	96.5	98.5	101.0	102.5	101.8
0.2	97.3	96.5	98.5	101.2	104.2	98.2
0.2	97.2	97.2	100.0	102.5	103.5	97.4
0.5	98.0	96.2	98.2	103.4	104.5	97.4
0.4	98.4	98.0	100.0	103.7	103.5	96.9
0.0	98.0	96.7	102.0	103.9	104.7	96.4
0.1	98.4	97.6	99.9	104.1	102.7	95.6
0.1	100.7	99.4	101.4	103.6	102.1	94.4
0.1	99.6	98.8	99.9	103.6	100.4	95.3
0.8	99.8	98.1	99.9	101.8	99.8	94.3
0.3	98.6	98.0	100.5	100.8	99.1	93.8
0.2	97.0	95.8	98.8	99.5	99.0	92.2
0.6	96.4	94.7	96.9	98.2	96.4	89.6
0.8	100.0	97.3	99.6	104.0	100.5	92.6
0.1	94.8	92.9	94.4	96.4	95.3	88.3
0.3	95.0	93.5	95.0	95.5	94.3	86.5
0.3	97.3	96.3	98.7	98.7	97.5	87.5
0.6	95.3	94.0	96.0	96.1	95.3	85.1
0.6	96.1	94.4	95.9	96.3	95.6	83.6
0.1	96.4	94.2	95.4	95.7	95.7	82.2
0.8	94.3	92.1	93.1	93.3	93.6	79.0
0.0	94.3	92.0	92.3	92.7	92.6	77.7
0.4	93.8	90.9	92.4	92.7	92.4	81.1
0.0	93.3	91.2	93.9	94.6	93.6	86.3
0.2	97.7	97.0	98.2	98.2	97.4	97.6

32

FOLDOUT FRAME

2

# SPL LOSSLESS DATA AT 100 FCCT RADIUS

QCSEE OTW ENGINE TEST

BULK ABSORBER INLET

3000 FT. RUNWAY CONF.

ENGINE ALCNE TEST

READING NUMBERS = 41 42 43

CONFIGURATION NC = 300

SPEED = 3564. RPM

TEMPERATURE = 52.0 F

RELATIVE HUMIDITY = 60.0 PC

*SIDELINE PLANE*

BOOM MICROPHONES - LOSSLESS DATA

MIC #	13	14	15	16	17
R	0.	17.	31.	43.	54.
THETA, $\theta_s$	90.	90.	90.	90.	90.
Z	106.	98.	91.	86.	81.
DISTANCE	91.	85.	82.	83.	86.
PHI, $\phi$	0.	11.	22.	31.	39.

INDEX FREQ

1	50.	89.9	92.0	92.6	91.3	92.0
2	63.	94.8	93.7	94.1	94.0	93.2
3	80.	95.0	96.1	97.1	96.2	97.5
4	100.	94.3	94.6	95.6	95.9	97.3
5	125.	94.7	95.6	96.9	97.5	96.8
6	160.	94.3	96.6	97.6	97.7	97.3
7	200.	95.5	96.9	97.8	97.9	98.5
8	250.	95.2	96.9	97.9	97.9	98.7
9	315.	95.2	96.7	98.0	98.2	99.0
10	400.	94.7	95.9	97.6	98.7	98.5
11	500.	95.0	96.1	97.1	98.1	98.4
12	630.	93.2	94.9	96.1	98.2	99.1
13	800.	93.2	95.3	96.2	98.4	98.2
14	1000.	92.2	93.6	95.2	97.1	97.1
15	1250.	91.1	92.8	93.7	95.3	96.1
16	1600.	95.5	96.1	95.6	97.0	96.8
17	2000.	90.2	91.8	92.2	93.6	93.7
18	2500.	89.4	90.4	91.0	92.4	93.0
19	3150.	90.6	92.9	92.0	93.4	94.2
20	4000.	89.4	91.4	90.4	92.0	93.0
21	5000.	89.7	91.7	90.3	92.6	93.5
22	6300.	89.6	91.7	89.8	93.1	93.2
23	8000.	88.0	91.0	87.4	91.3	91.8
24	10000.	87.9	90.3	85.8	91.4	91.5
25	12500.	87.9	89.9	83.5	90.4	90.7
26	16000.	87.7	90.0	82.4	91.1	90.2
27	20000.	85.5	86.6	80.7	88.2	87.2

CASPL 107.1 108.4 109.0 110.0 110.4

FOLDOUT FRAME /

43

SPEED = 3564. RPM

PERCENT SPEED

95.0

FGK 18970

IVE HUMIDITY = 60.0 PC

BAROMETER = 29.33 IN HG

XM11 .740

25° DOOR

33

S.S. 18

FOLDOUT FRAME

2



DATA OF 427. SUBSET NO. 18. READINGS 41 42 43

CCSEE OTW ENGINE TEST  
PULK ABSORBER INLET  
3000 FT. RUNWAY CCNF.  
ENGINE ALONE TEST

ORIGINAL PAGE IS  
OF POOR QUALITY

SPL LOSSLESS ARRAY

FLYOVER PLANE

DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERIC  
(FOR POWER AND DIRECTIVITY COMPUTATION)

ENGINE CENTERLINE MICROPHONES

ANGLE,  $\theta$  60. 90. 120.

COMPUTED DASPL 109.0 113.7 118.8

BAND FREQUENCY

1	50	93.7	96.7	103.4
2	63	96.5	99.2	105.4
3	80	96.9	100.9	105.5
4	100	95.2	99.0	104.5
5	125	94.9	99.0	104.0
6	160	93.4	96.7	101.4
7	200	90.9	93.6	104.1
8	250	93.6	95.7	107.6
9	315	97.8	101.3	110.3
10	400	98.3	105.1	109.4
11	500	97.3	105.8	106.9
12	630	97.5	101.8	106.3
13	800	97.0	102.7	105.5
14	1000	95.7	100.2	104.2
15	1250	94.8	98.6	103.1
16	1600	96.5	99.5	105.5
17	2000	93.6	96.8	101.3
18	2500	93.0	96.0	99.7
19	3150	93.2	97.7	101.9
20	4000	92.2	96.7	100.0
21	5000	91.6	97.3	97.8
22	6300	88.8	95.5	100.0
23	8000	88.1	95.6	97.8
24	10000	86.1	92.9	95.2
25	12500	86.0	92.7	95.4
26	16000	86.4	92.7	95.9
27	20000	95.5	95.0	104.8

34

FOLDOUT FRAME /

CONFIGURATION NO 300  
SPEED = 3564. RPM  
PERCENT SPEED = 95.0

LOSSLESS ARRAY

ORIGINAL PAGE IS  
OF POOR QUALITY

FT RADIUS WITH NO ATMOSPHERIC ATTENUATION  
(POWER AND DIRECTIVITY COMPUTATIONS)

34

FOLDOUT FRAME

2

DATA OF 427. SURSET NO. 18. READINGS 41 42 43

SIX DECIBELS HAVE BEEN SUBTRACTED FROM THE ORIGINAL DATA.  
 QCSEE OTW ENGINE TEST  
 BULK ABSORBER INLET  
 3000 FT. RUNWAY CCNF.  
 ENGINE ALONE TEST

ORIGINAL PAGE IS  
 OF POOR QUALITY

*SPL* LOSSLESS ARRAY  
*FLYOVER PLANE* DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERIC  
 (FOR POWER AND DIRECTIVITY COMPUTATION)

ANGLE,  $\theta$  0. 30. 50. 60. 70. 80. 90. 100. 110. 120. 130.  
 COMPUTED DASPL 102.0 103.3 104.7 106.2 107.8 109.2 113.8 112.7 114.7 117.0 116.6

BAND FREQUENCY

1	50	86.0	86.3	88.3	89.8	90.2	90.0	96.3	94.2	94.3	99.3	102.0
2	63	88.3	88.2	89.2	90.7	91.7	92.0	97.0	96.0	99.3	100.0	103.1
3	80	90.0	89.5	91.7	92.5	93.7	94.8	99.7	98.2	99.8	102.3	105.8
4	100	89.8	89.3	91.3	92.5	93.5	94.0	99.2	97.8	100.2	103.5	105.1
5	125	88.9	90.7	92.4	92.5	94.4	94.0	99.0	98.5	102.4	105.7	106.7
6	160	88.7	92.0	92.2	93.5	95.2	93.5	99.4	98.2	101.7	105.4	106.1
7	200	87.5	92.5	92.5	93.4	94.7	96.4	100.9	99.4	102.7	106.2	106.9
8	250	88.7	90.7	92.1	93.7	95.7	96.9	99.9	98.4	102.4	106.4	106.1
9	315	86.9	90.4	92.7	95.6	97.2	95.6	99.6	100.2	102.4	106.4	104.2
10	400	84.6	90.1	93.9	94.6	96.4	97.6	103.6	102.6	103.7	106.4	104.1
11	500	83.8	88.9	93.1	95.9	96.3	99.4	103.8	101.6	102.4	105.9	102.8
12	630	83.6	88.1	92.3	93.4	97.0	99.5	103.4	102.3	102.8	104.4	102.0
13	800	83.3	87.6	91.6	93.0	96.1	98.8	101.5	99.8	102.1	102.6	101.6
14	1000	83.9	87.5	90.8	91.8	95.0	96.7	99.0	98.0	101.0	101.5	100.9
15	1250	87.4	88.9	90.2	91.1	92.9	94.1	97.7	96.6	99.1	100.2	97.9
16	1600	94.5	94.7	92.7	94.3	94.2	97.0	99.0	98.5	102.2	103.2	99.3
17	2000	98.4	88.4	88.9	90.1	91.3	93.0	97.1	95.6	98.3	99.6	97.6
18	2500	87.0	86.8	87.5	88.8	91.3	92.3	97.0	96.0	97.5	97.8	95.7
19	3150	90.5	89.0	88.8	90.0	91.3	93.0	98.8	98.3	100.7	99.5	96.8
20	4000	87.3	86.7	87.2	88.5	90.3	92.2	97.3	96.5	98.5	98.5	96.7
21	5000	87.3	86.3	87.0	89.3	90.6	92.8	98.2	97.0	98.1	97.5	95.3
22	6300	85.4	84.8	85.1	88.6	90.0	92.1	98.0	97.5	98.0	98.0	96.0
23	8000	82.5	81.8	82.2	85.8	87.5	89.9	96.0	95.4	95.7	96.1	94.0
24	10000	81.2	80.7	81.4	85.3	87.1	89.1	95.6	94.6	95.3	96.0	93.3
25	12500	78.9	78.0	79.2	84.3	84.7	88.3	95.0	93.6	94.4	95.2	92.9
26	16000	79.2	78.1	78.8	83.2	84.2	87.9	94.9	93.8	95.8	96.3	95.1
27	20000	88.1	89.7	88.8	89.0	89.8	89.2	99.3	99.1	99.7	100.6	99.9

...  
TED FROM THE ORIGINAL DATA.

CONFIGURATION NO 300  
SPEED = 3564. RPM  
PERCENT SPEED = 95.0

LOSSLESS ARRAY  
0 FT RADIUS WITH NO ATMOSPHERIC ATTENUATION  
(POWER AND DIRECTIVITY COMPUTATIONS)

ORIGINAL PAGE IS  
OF POOR QUALITY

90. 100. 110. 120. 130. 150.

2 113.8 112.7 114.7 117.0 116.6 113.5

0	96.3	94.2	94.3	99.3	102.0	108.5
0	97.0	96.0	99.3	100.0	103.7	106.8
8	99.7	98.2	99.8	102.3	105.8	104.2
0	99.2	97.8	100.2	103.5	105.7	100.2
0	99.0	98.5	102.4	105.7	106.2	99.0
5	99.4	98.2	101.7	105.4	106.7	98.2
4	100.9	99.4	102.7	106.2	106.5	98.7
9	99.9	98.4	102.4	106.4	106.1	97.9
6	99.6	100.2	102.4	106.4	104.2	97.6
6	103.6	102.6	103.7	106.4	104.1	96.4
4	103.8	101.6	102.4	105.9	102.8	96.9
5	103.4	102.3	102.8	104.4	102.0	95.6
9	101.5	99.8	102.1	102.6	101.6	96.1
7	99.0	98.0	101.0	101.5	100.5	95.0
1	97.7	96.6	99.1	100.2	97.9	92.1
0	99.0	98.5	102.2	103.2	99.3	93.5
0	97.1	95.6	98.3	99.6	97.6	90.9
0	97.0	96.0	97.5	97.8	95.7	88.2
0	98.8	98.3	100.7	99.5	96.8	88.2
0	97.3	96.5	98.5	98.5	96.7	86.5
0	98.2	97.0	98.1	97.5	95.3	84.9
0	98.0	97.5	98.0	98.0	96.0	84.3
0	96.0	95.4	95.7	96.1	94.0	81.0
0	95.6	94.6	95.3	96.0	93.3	79.0
0	95.0	93.6	94.4	95.2	92.9	81.2
0	94.9	93.8	95.8	96.3	95.1	86.6
0	99.3	99.1	99.7	100.6	99.9	98.7

# SPL LOSSLESS DATA AT 100 FOOT RADIUS

QCSEE OTW ENGINE TEST

BULK ABSORBER INLET

3000 FT. RUNWAY CONF.

ENGINE ALONE TEST

READING NUMBERS = 44 45 46

CONFIGURATION NC = 300

SPEED = 3640. RPM

TEMPERATURE = 52.0 F

RELATIVE HUMIDITY = 62.0 PC

SIDELINE PLANE

BOOM MICROPHONES - LOSSLESS DATA

MIC #	13	14	15	16	17
R	0.	17.	31.	43.	54.
THETA, $\theta$	90.	90.	90.	90.	90.
Z	106.	98.	91.	86.	81.
DISTANCE	91.	85.	82.	83.	86.
PHI, $\phi$	0.	11.	22.	31.	39.

INDEX	FREQ					
1	50.	92.8	91.4	91.6	92.3	92.0
2	63.	94.3	93.5	94.6	93.5	94.7
3	80.	94.8	96.1	96.8	97.2	97.7
4	100.	94.5	95.4	95.4	96.0	97.2
5	125.	95.0	96.9	96.8	98.4	97.0
6	160.	95.3	96.2	96.8	97.9	97.8
7	200.	95.0	96.4	98.4	99.4	99.3
8	250.	96.2	96.4	98.1	98.2	100.2
9	315.	95.8	96.7	98.5	98.7	99.7
10	400.	96.4	95.9	97.5	98.2	99.0
11	500.	95.9	95.6	97.1	98.6	99.2
12	630.	93.5	95.4	96.2	98.4	99.2
13	800.	93.7	96.1	96.5	98.4	99.2
14	1000.	92.6	94.3	95.9	97.6	97.9
15	1250.	91.6	93.5	94.2	95.8	96.5
16	1600.	95.8	96.2	96.4	96.2	97.2
17	2000.	90.9	92.0	92.5	93.8	94.2
18	2500.	89.7	90.9	91.1	92.7	93.7
19	3150.	91.2	93.1	92.3	93.7	94.5
20	4000.	89.5	91.5	90.4	92.7	93.7
21	5000.	89.7	91.8	90.6	93.6	93.9
22	6300.	90.0	91.6	89.8	93.7	93.6
23	8000.	88.2	91.3	87.2	91.7	92.1
24	10000.	88.1	90.2	85.6	91.8	91.7
25	12500.	88.1	89.9	83.5	90.9	90.9
26	16000.	87.8	89.7	82.3	91.5	90.7
27	20000.	85.5	86.3	80.9	88.0	87.4

CASPL

107.6 108.6 109.1 110.4 111.0

46

SPEED = 3640. RPM

PERCENT SPEED 97.0

FGK 19548

RELATIVE HUMIDITY = 62.0 PC

BAROMETER = 29.33 IN HG XM11 .770

DATA

25° DOOR

S.S. 19

DATA OF 427. SUBSET NO. 19. READINGS 44 45 46

CCSEE CTW ENGINE TEST  
BULK ABSORBER INLET  
3000 FT. RUNWAY CCNF.  
ENGINE ALONE TEST

SPL LOSSLESS ARRAY

FLYOVER PLANE DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERE  
(FOR POWER AND DIRECTIVITY COMPUTATION)

ENGINE CENTERLINE MICROPHONES

ANGLE,  $\theta$  60. 90. 120.

COMPUTED DASPL 109.7 113.8 119.6

BAND FREQUENCY

1	50	96.7	98.4	104.4
2	63	96.4	99.7	105.7
3	80	97.7	101.5	107.0
4	100	96.2	100.5	104.2
5	125	96.2	99.5	104.4
6	160	94.4	97.7	101.7
7	200	90.4	93.6	103.7
8	250	94.2	95.1	107.9
9	315	99.3	100.4	110.9
10	400	99.3	104.9	110.3
11	500	97.8	106.1	107.3
12	630	97.8	101.1	107.5
13	800	97.5	102.5	106.8
14	1000	96.5	100.7	106.2
15	1250	95.6	98.1	104.4
16	1600	96.7	99.8	105.8
17	2000	94.0	97.0	102.6
18	2500	93.8	95.7	100.7
19	3150	93.2	97.5	103.7
20	4000	92.5	96.5	101.3
21	5000	91.9	96.7	99.8
22	6300	89.5	95.1	101.4
23	8000	88.4	94.9	99.5
24	10000	86.2	92.4	96.7
25	12500	86.1	92.1	95.6
26	16000	86.6	92.0	96.7
27	20000	96.0	95.8	105.8

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FOLDOUT FRAME /

CONFIGURATION NO 300  
SPEED = 3640. RPM  
PERCENT SPEED = 97.0

## LOSSLESS ARRAY

0 FT RADIUS WITH NO ATMOSPHERIC ATTENUATION  
POWER AND DIRECTIVITY COMPUTATIONS)

37

FOLDOUT FRAME

2



SIX DECIBELS HAVE BEEN SUBTRACTED FROM THE ORIGINAL DATA.  
 QCSEE OTW ENGINE TEST  
 PULK ABSORBER INLET  
 3000 FT. RUNWAY CCNF.  
 ENGINE ALONE TEST

ORIGINAL PAGE IS  
 OF POOR QUALITY

SPL LOSSLESS ARRAY

FLYOVER PLANE DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERIC  
 (FOR POWER AND DIRECTIVITY COMPUTATION)

ANGLE,  $\theta$  0. 30. 50. 60. 70. 80. 90. 100. 110. 120. 130.  
 COMPUTED OASPL 101.9 102.9 105.3 106.2 108.1 110.0 114.6 114.1 115.7 117.2 117.7

## BAND FREQUENCY

1	50	84.0	86.7	88.5	89.3	90.2	91.0	96.3	94.0	96.5	100.0	102.5
2	63	88.8	88.0	91.5	91.5	92.7	93.8	98.0	96.3	98.5	102.5	103.2
3	80	91.5	90.3	93.0	93.3	94.3	95.8	100.8	98.8	101.3	103.2	106.4
4	100	90.7	89.8	91.0	93.2	94.3	94.3	99.3	100.3	101.0	103.3	106.4
5	125	91.2	90.5	92.2	92.9	95.7	94.2	99.2	101.0	103.0	105.4	107.2
6	160	91.4	92.2	93.4	94.5	95.5	95.0	99.5	101.2	102.7	105.9	107.2
7	200	88.0	92.5	94.2	93.5	94.5	95.9	101.4	101.9	103.2	106.4	107.2
8	250	88.8	92.2	92.6	94.1	95.6	96.7	100.4	99.0	103.4	106.1	107.2
9	315	87.3	91.9	93.7	96.4	96.4	95.9	100.6	100.3	103.1	106.9	107.2
10	400	85.1	90.7	94.9	94.4	96.1	97.9	103.9	104.6	105.1	107.2	107.2
11	500	83.8	89.4	93.6	95.1	96.8	101.4	104.6	103.6	104.1	106.4	107.2
12	630	83.4	89.1	93.1	93.3	97.5	100.8	104.6	102.6	104.5	105.1	107.2
13	800	83.9	88.3	92.3	93.3	98.0	100.1	102.5	101.1	103.6	103.6	107.2
14	1000	83.9	87.7	91.7	92.5	95.3	97.2	100.0	99.5	102.2	101.8	107.2
15	1250	87.1	87.2	90.9	91.6	93.2	94.2	99.2	98.6	99.9	100.1	107.2
16	1600	93.5	90.5	91.5	92.5	94.0	96.2	100.7	100.7	102.7	101.8	107.2
17	2000	98.3	86.6	88.9	89.8	91.4	93.6	98.4	98.3	99.8	99.8	107.2
18	2500	85.0	85.5	88.2	89.5	91.3	93.0	98.7	97.5	98.7	97.6	107.2
19	3150	87.0	85.1	87.6	89.1	91.0	93.6	99.6	99.5	101.1	98.3	107.2
20	4000	84.9	83.6	86.5	88.0	90.0	92.6	98.8	98.3	98.8	97.3	107.2
21	5000	83.4	83.0	85.9	88.7	90.1	93.4	99.2	97.9	98.6	96.4	107.2
22	6300	81.3	81.7	84.5	87.5	89.2	92.9	99.5	98.0	98.5	96.9	107.2
23	8000	78.0	78.7	81.5	85.1	87.0	90.7	97.6	95.7	96.4	94.2	107.2
24	10000	76.4	77.3	81.0	84.9	86.0	90.1	97.2	95.6	95.9	93.9	107.2
25	12500	76.1	74.6	79.3	83.5	83.8	89.0	96.4	94.7	94.9	94.0	107.2
26	16000	76.0	76.1	77.9	82.2	83.6	88.8	96.4	94.5	96.7	95.1	107.2
27	20000	89.7	89.3	89.5	89.3	90.4	90.1	99.2	99.5	100.1	100.0	107.2

ED FROM THE ORIGINAL DATA.

CONFIGURATION NO 300  
 SPEED = 3640. RPM  
 PERCENT SPEED = 97.0

## LOSSLESS ARRAY

ORIGINAL PAGE IS  
 OF POOR QUALITY

FT RADIUS WITH NO ATMOSPHERIC ATTENUATION  
 POWER AND DIRECTIVITY COMPUTATIONS)

90. 100. 110. 120. 130. 150.

114.6 114.1 115.7 117.2 117.8 115.0

96.3	94.0	96.5	100.0	102.5	108.7
98.0	96.3	98.5	102.5	103.2	108.2
100.8	98.8	101.3	103.2	106.5	106.7
99.3	100.3	101.0	103.3	106.5	102.2
99.2	101.0	103.0	105.4	107.7	101.4
99.5	101.2	102.7	105.9	107.9	100.4
101.4	101.9	103.2	106.4	107.4	101.4
100.4	99.0	103.4	106.1	107.7	100.5
100.6	100.3	103.1	106.9	105.9	99.9
103.9	104.6	105.1	107.2	106.2	99.1
104.6	103.6	104.1	106.4	104.4	98.1
104.6	102.6	104.5	105.1	103.5	97.8
102.5	101.1	103.6	103.6	103.1	98.0
100.0	99.5	102.2	101.8	102.5	95.8
99.2	98.6	99.9	100.1	99.4	94.4
100.7	100.7	102.7	101.8	99.8	94.1
98.4	98.3	99.8	99.8	98.3	91.3
98.7	97.5	98.7	97.6	96.5	88.6
99.6	99.5	101.1	98.3	97.8	88.6
98.8	98.3	98.8	97.3	97.1	86.8
99.2	97.9	98.6	96.4	96.6	85.2
99.5	98.0	98.5	96.9	97.0	84.3
97.6	95.7	96.4	94.2	94.9	80.0
97.2	95.6	95.9	93.9	93.9	79.6
96.4	94.7	94.9	94.0	93.1	80.9
96.4	94.5	96.7	95.1	94.6	86.5
99.2	99.5	100.1	100.0	99.9	100.5

# SPL LOSSLESS DATA AT 100 FOOT RADIUS

QCSEE CTW ENGINE TEST

BULK ABSORBER INLET

3000 FT. RUNWAY CONF.

ENGINE ALONE TEST

READING NUMBERS = 47 48 49

CONFIGURATION NC = 300

SPEED = 1682. RPM

TEMPERATURE = 57.0 F

RELATIVE HUMIDITY = 41.0 PC

*SIDELINE PLANE*

BOOM MICROPHONES - LOSSLESS DATA

MIC #	13	14	15	16	17
R	0.	17.	31.	43.	54.
THETA, $\theta_s$	90.	90.	90.	90.	90.
Z	106.	98.	91.	86.	81.
DISTANCE	91.	85.	82.	83.	86.
PHI, $\phi$	0.	11.	22.	31.	39.

INDEX	FREQ					
1	50.	74.8	74.4	76.1	76.7	78.5
2	63.	76.8	77.1	75.1	75.5	77.0
3	80.	77.6	79.1	79.1	81.0	80.0
4	100.	77.1	74.7	74.3	74.9	78.0
5	125.	74.0	73.7	74.9	75.5	73.7
6	160.	71.7	72.4	74.3	74.4	73.8
7	200.	74.2	75.7	77.8	78.7	78.7
8	250.	74.8	75.1	76.8	77.7	77.4
9	315.	75.2	75.9	76.6	76.6	76.4
10	400.	74.4	75.4	75.8	76.7	76.9
11	500.	73.2	75.9	78.5	78.6	78.9
12	630.	75.1	76.9	78.7	79.8	80.9
13	800.	80.7	81.5	83.5	84.9	85.1
14	1000.	75.1	76.7	78.2	79.0	79.4
15	1250.	74.1	76.4	77.7	77.8	77.8
16	1600.	72.9	74.8	76.0	76.4	76.0
17	2000.	70.6	72.9	73.1	73.5	73.0
18	2500.	70.5	71.5	72.2	73.6	73.3
19	3150.	69.2	70.9	71.1	72.9	72.9
20	4000.	69.2	70.8	70.5	72.9	74.0
21	5000.	71.0	72.8	72.1	75.0	75.4
22	6300.	73.5	75.8	74.3	78.2	77.9
23	8000.	71.0	74.6	70.6	76.2	75.9
24	10000.	73.7	75.7	70.8	77.3	77.7
25	12500.	78.5	81.4	75.1	82.5	82.9
26	16000.	72.4	74.3	67.6	76.6	76.2
27	20000.	74.5	73.9	71.3	75.7	74.6

OASPL 89.1 90.4 90.6 92.4 92.6

FOLDOUT FRAME /

49

SPEED = 1682. RPM

PERCENT SPEED

45.0

FGK 3872

IVE HUMIDITY = 41.0 PC

BAROMETER = 29.31 IN HG

XMH .256

11 1/2 ° DOOR

39

S.S. 20

FOLDOUT FRAME

2

DATA OF 427. SUBSET NO. 20. READINGS 47 48 49

QCSEE OTW ENGINE TEST  
BULK ABSORBER INLET  
3000 FT. RUNWAY CCNF.  
ENGINE ALONE TEST

ORIGINAL PAGE IS  
OF POOR QUALITY

SPL LOSSLESS ARRAY

FLYOVER PLANE

DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERIC  
(FOR POWER AND DIRECTIVITY COMPUTATION)

ENGINE CENTERLINE MICROPHONES

ANGLE,  $\theta$ , 60. 90. 120.

COMPUTED OASPL 93.9 95.4 99.3

BAND FREQUENCY

1	50	75.7	80.5	80.9
2	63	79.2	84.5	86.2
3	80	81.0	86.0	88.0
4	100	77.2	81.0	91.7
5	125	72.4	79.5	77.5
6	160	71.2	74.2	72.4
7	200	73.2	69.6	78.6
8	250	72.7	75.4	85.1
9	315	76.8	79.9	85.3
10	400	78.1	81.4	85.8
11	500	76.3	81.8	82.3
12	630	76.7	80.1	85.0
13	800	85.3	84.8	92.5
14	1000	77.2	78.2	85.2
15	1250	77.5	77.5	83.5
16	1600	79.2	76.6	82.2
17	2000	73.4	74.3	80.4
18	2500	74.4	74.2	82.2
19	3150	73.6	74.6	81.0
20	4000	73.1	74.8	79.6
21	5000	73.7	76.1	82.1
22	6300	79.3	81.0	85.6
23	8000	78.4	76.2	81.6
24	10000	81.2	79.3	81.9
25	12500	76.9	83.6	88.3
26	16000	76.1	78.7	85.9
27	20000	89.4	88.5	87.8

40

FOLDOUT FRAME /

CONFIGURATION NC 300  
SPEED = 1682. RPM  
PERCENT SPEED = 45.0

ORIGINAL PAGE IS  
OF POOR QUALITY

LOSSLESS ARRAY

ET RADIUS WITH NO ATMOSPHERIC ATTENUATION  
AND DIRECTIVITY COMPUTATIONS)

40

FOLDOUT FRAME

2

DATA OF 427. SURSET NO. 20. READINGS 47 48 49

SIX DECIBELS HAVE BEEN SUBTRACTED FROM THE ORIGINAL DATA.  
 QCSEE OTW ENGINE TEST  
 BULK ABSORBER INLET  
 3030 FT. RUNWAY CNF.  
 ENGINE ALONE TEST

SPL LOSSLESS ARRAY

FLYOVER PLANE DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERE  
 (FOR POWER AND DIRECTIVITY COMPUTATION)

ANGLE $\theta_F$		0.	30.	50.	60.	70.	80.	90.	100.	110.	120.	130
COMPUTED DASPL		99.0	92.6	91.4	89.2	89.4	90.2	91.0	91.8	95.9	96.3	95.
BAND FREQUENCY												
1	50	72.8	72.3	72.0	70.8	70.5	74.0	75.5	75.7	76.7	77.3	79.
2	63	75.5	73.8	74.0	75.2	76.3	78.8	78.5	78.3	82.2	82.8	82.
3	80	77.7	71.7	77.2	75.0	77.0	80.2	80.2	81.5	86.0	86.0	84.
4	100	80.8	74.3	79.0	73.5	77.5	78.5	76.5	80.0	81.3	82.0	82.
5	125	79.0	73.5	76.5	70.7	75.7	71.2	74.2	75.9	78.9	80.4	80.
6	160	75.2	70.0	72.4	72.5	73.4	72.9	73.7	76.2	77.5	79.9	79.
7	200	78.7	74.5	77.0	74.0	74.7	75.7	75.4	76.2	79.2	82.7	82.
8	250	76.7	74.1	74.1	72.9	74.1	74.7	75.7	76.4	80.6	84.2	84.
9	315	75.4	72.4	73.6	74.7	74.2	73.9	74.1	77.9	79.9	81.6	81.
10	400	72.6	69.9	73.3	73.3	72.8	73.8	74.9	78.8	82.1	83.6	82.
11	500	73.1	70.1	72.1	73.3	73.4	75.9	75.1	76.4	80.4	80.1	80.
12	630	75.0	73.3	73.6	72.8	74.6	76.8	77.0	76.3	79.0	81.1	80.
13	800	87.2	84.2	82.0	79.0	80.3	79.7	79.0	80.3	84.8	88.2	87.
14	1000	81.4	76.0	74.4	72.9	74.5	75.2	75.0	74.5	78.2	80.7	80.
15	1250	82.9	77.0	74.8	72.6	73.8	73.9	75.4	75.4	79.6	79.6	78.
16	1600	84.4	79.9	77.4	73.9	73.2	72.6	73.9	73.9	79.7	79.7	77.
17	2000	81.6	76.1	72.4	69.2	68.7	70.1	71.4	71.2	77.6	76.6	75.
18	2500	82.0	78.5	74.2	70.2	69.8	71.0	71.4	72.7	78.5	78.2	77.
19	3150	79.8	77.3	73.9	69.8	68.1	69.4	71.6	71.9	77.8	75.1	75.
20	4000	80.5	76.4	73.5	70.1	67.3	68.8	71.3	72.1	77.1	76.0	73.
21	5000	80.4	76.7	74.2	71.0	69.5	70.7	74.4	74.2	78.9	76.7	77.
22	6300	95.5	83.5	80.5	74.8	72.0	73.5	78.4	78.1	82.5	81.0	80.
23	8000	90.5	84.9	83.0	79.0	73.3	72.0	74.3	74.8	80.0	78.3	75.
24	10000	80.3	76.7	77.5	75.9	72.6	72.6	75.5	74.6	80.1	77.8	75.
25	12500	83.6	73.6	73.1	73.1	72.9	78.5	82.4	81.6	87.2	85.7	85.
26	16000	85.5	77.2	74.6	72.7	69.7	72.6	76.6	76.7	85.5	83.1	80.
27	20000	83.9	83.8	82.8	82.5	82.8	82.3	81.6	82.2	83.7	82.7	82.

41

FOLDOUT FRAME /

ED FROM THE ORIGINAL DATA.

CONFIGURATION NO 300  
SPEED = 1682. RPM  
PERCENT SPEED = 45.0

# LOSSLESS ARRAY

0 FT RADIUS WITH NO ATMOSPHERIC ATTENUATION  
POWER AND DIRECTIVITY COMPUTATIONS)

. 90. 100. 110. 120. 130. 150.

2 91.0 91.8 95.9 96.3 95.7 90.4

0 75.5 75.7 76.7 77.3 79.5 79.3

8 78.5 78.3 82.2 82.8 82.5 80.8

2 80.2 81.5 86.0 86.0 84.3 80.7

5 76.5 80.0 81.3 82.0 82.0 79.2

2 74.2 75.9 78.9 80.4 80.7 74.5

9 73.7 76.2 77.5 79.9 79.4 73.5

7 75.4 76.2 79.2 82.7 82.5 75.5

7 75.7 76.4 80.6 84.2 84.6 74.4

9 74.1 77.9 79.9 81.6 81.2 74.4

8 74.9 78.8 82.1 83.6 82.1 74.8

9 75.1 76.4 80.4 80.1 80.4 72.8

8 77.0 76.3 79.0 81.1 80.6 73.8

7 79.0 80.3 84.8 88.2 87.5 80.0

2 75.0 74.5 78.2 80.7 80.4 74.5

9 75.4 75.4 79.6 79.6 78.0 74.8

6 73.9 73.9 79.7 79.7 77.1 73.4

1 71.4 71.2 77.6 76.6 75.4 69.4

0 71.4 72.7 78.5 78.2 77.4 70.3

4 71.6 71.9 77.8 75.1 75.9 68.3

8 71.3 72.1 77.1 76.0 73.7 67.6

7 74.4 74.2 78.9 76.7 77.4 68.9

5 78.4 78.1 82.5 81.0 80.9 72.6

0 74.3 74.8 80.0 78.3 75.9 69.1

3 75.5 74.6 80.1 77.8 75.9 69.3

5 82.4 81.6 87.2 85.7 85.4 76.1

5 76.6 76.7 85.5 83.1 80.4 73.7

1 81.6 82.2 83.7 82.7 82.8 82.0

41

FOLDOUT FRAME

2



*SPL* LOSSLESS DATA AT 100 FCCT RADIUS

QCSEE CTW ENGINE TEST

BULK ABSORBER INLET

3000 FT. RUNWAY CONF.

ENGINE ALCNE TEST

ORIGINAL PAGE IS  
OF POOR QUALITY

READING NUMBERS = 50 51 52

CONFIGURATION NC = 300

SPEED = 2458. RPM

TEMPERATURE = 58.0 F

RELATIVE HUMIDITY = 37.0 PC

*SIDELINE PLANE* BCOM MICROPHONES - LOSSLESS DATA

MIC #	13	14	15	16	17
R	0.	17.	31.	43.	54.
THETA, $\theta_s$	90.	90.	90.	90.	90.
Z	106.	98.	91.	86.	81.
DISTANCE	91.	85.	82.	83.	86.
PHI, $\phi$	0.	11.	22.	31.	39.

INDEX FREQ

1	50.	81.0	80.0	81.8	81.3	80.8
2	63.	82.5	82.2	82.4	82.5	82.7
3	80.	83.1	84.9	86.9	87.0	87.0
4	100.	83.0	82.9	84.1	85.5	87.3
5	125.	82.2	82.4	84.3	84.2	83.5
6	160.	82.0	83.4	82.8	84.2	83.7
7	200.	83.8	85.1	85.4	87.4	86.7
8	250.	85.3	86.1	87.5	87.7	86.2
9	315.	83.7	84.8	85.0	85.2	85.9
10	400.	83.2	83.9	84.0	84.6	86.4
11	500.	82.7	83.4	85.1	85.7	86.7
12	630.	81.9	83.0	84.2	85.6	86.7
13	800.	82.9	84.6	85.2	86.8	87.7
14	1000.	82.4	84.7	84.7	86.1	86.6
15	1250.	85.3	87.4	88.2	89.8	89.5
16	1600.	78.9	79.8	81.0	82.2	81.9
17	2000.	78.3	79.7	80.3	81.0	81.0
18	2500.	80.2	82.2	81.3	82.4	82.8
19	3150.	79.3	80.7	80.2	81.9	81.9
20	4000.	78.6	80.6	79.4	81.8	81.9
21	5000.	78.6	81.0	79.0	81.8	82.0
22	6300.	79.4	82.0	79.7	83.2	83.1
23	8000.	79.9	83.2	79.4	84.6	84.6
24	10000.	80.8	83.9	79.4	85.6	85.3
25	12500.	81.3	83.7	77.5	85.1	85.0
26	16000.	80.4	83.7	76.9	86.1	85.4
27	20000.	76.5	77.8	72.0	80.3	79.1

OASPL 96.2 97.7 97.7 99.4 99.5

FOLDOUT FRAME

ORIGINAL PAGE IS  
OF POOR QUALITY

52

SPEED = 2458. RPM

PERCENT SPEED 65.0

FGK 8736

ATIVE HUMIDITY = 37.0 PC

BAROMETER = 29.30 IN HG

XM11 403

ATA

11 1/2° DOOR

S.S. 21

42

FOLDOUT FRAME

2

DATA OF 427. SUBSET NO. 21. READINGS 50 51 52

QCSEE OTW ENGINE TEST  
BULK ABSORBER INLET  
3000 FT. RUNWAY CNF.  
ENGINE ALONE TEST

SPL LOSSLESS ARRAY

FLYOVER PLANE DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERIC  
(FOR POWER AND DIRECTIVITY COMPUTATION)

ENGINE CENTERLINE MICROPHONES

ANGLE  $\theta$  60. 90. 120.

COMPUTED DASPL 100.0 101.6 105.7

BAND FREQUENCY

1	50	83.9	86.0	89.9
2	63	84.4	88.4	91.5
3	80	85.5	90.5	92.0
4	100	86.9	90.4	90.9
5	125	85.0	87.5	86.9
6	160	80.2	83.2	83.1
7	200	80.1	79.7	91.1
8	250	81.2	84.6	97.9
9	315	84.4	90.6	95.4
10	400	85.4	91.6	92.6
11	500	83.5	90.3	90.5
12	630	82.0	87.6	92.2
13	800	83.4	87.0	92.5
14	1000	86.6	86.1	92.1
15	1250	91.8	88.3	95.3
16	1600	81.9	82.8	87.8
17	2000	82.6	83.3	86.8
18	2500	85.4	84.4	90.4
19	3150	84.2	84.1	88.2
20	4000	83.9	84.4	87.5
21	5000	82.7	83.0	88.1
22	6300	85.8	85.2	88.3
23	8000	82.8	84.9	87.7
24	10000	90.3	86.4	90.1
25	12500	87.7	85.7	87.7
26	16000	84.5	87.0	91.4
27	20000	89.5	88.0	88.1

43

FOLDOUT FRAME |

CONFIGURATION NO 300  
SPEED = 2458. RPM  
PERCENT SPEED = 65.0

LOSSLESS ARRAY

ET RADIUS WITH NO ATMOSPHERIC ATTENUATION  
(POWER AND DIRECTIVITY COMPUTATIONS)

43

FOLDOUT FRAME 2

DATA OF 427. SUBSET NO. 21. READINGS 50 51 52

SIX DECIBELS HAVE BEEN SUBTRACTED FROM THE ORIGINAL DATA.  
 QCSEE OTW ENGINE TEST  
 BULK ABSORBER INLET  
 3000 FT. RUNWAY CCNF.  
 ENGINE ALONE TEST

ORIGINAL PAGE IS  
 OF POOR QUALITY

*SPL* LOSSLESS ARRAY  
*FLYOVER PLANE* DATA AT 100.0 FT RADIUS WITH NO ATMOSPHER  
 (FOR POWER AND DIRECTIVITY COMPUTA

ANGLE <i>of</i>		0.	30.	50.	60.	70.	80.	90.	100.	110.	120.	130.
COMPUTED OASPL		100.8	98.8	97.7	97.1	96.9	97.8	97.6	101.0	104.3	103.9	102
BAND FREQUENCY												
1	50	78.0	75.8	77.0	78.0	79.3	80.2	81.0	81.3	85.8	86.7	88
2	63	78.7	76.7	79.7	80.3	81.3	81.5	82.7	84.8	87.7	88.3	88
3	80	78.8	80.8	81.5	81.5	85.0	86.0	85.3	88.8	93.2	90.5	92
4	100	82.2	85.0	79.0	83.4	85.9	84.2	85.5	88.5	90.9	91.9	91
5	125	82.0	81.4	81.0	84.0	81.5	82.9	83.4	88.2	89.5	92.0	91
6	160	76.4	78.7	80.2	79.9	81.5	81.0	81.7	85.4	87.2	89.2	89
7	200	80.5	81.2	83.5	81.2	83.4	83.4	84.7	87.5	90.5	92.0	90
8	250	80.1	80.9	80.1	81.7	84.6	85.4	84.6	86.4	92.7	93.9	92
9	315	79.9	78.7	80.9	83.4	83.7	85.4	85.4	89.4	91.4	92.2	88
10	400	76.1	77.3	81.4	81.6	82.9	84.3	85.4	90.1	93.4	91.8	88
11	500	74.6	76.8	79.8	81.4	83.9	86.1	84.9	87.8	91.9	89.8	86
12	630	76.1	76.1	79.8	80.0	82.8	84.5	83.8	86.8	90.5	88.6	86
13	800	78.4	78.7	80.8	81.2	82.8	83.7	82.0	85.8	88.2	89.3	86
14	1000	98.0	85.6	84.1	82.4	83.1	84.2	82.1	85.2	89.2	89.7	85
15	1250	93.8	91.3	89.6	87.1	87.0	86.0	86.1	88.3	93.8	92.5	88
16	1600	87.1	84.1	81.4	78.9	78.2	80.4	78.6	82.6	85.7	84.9	83
17	2000	98.0	85.3	82.0	80.6	78.1	79.6	78.8	83.3	86.3	84.8	83
18	2500	92.4	88.6	85.3	84.1	81.6	82.4	81.3	86.3	89.6	88.4	88
19	3150	86.5	85.7	82.2	81.4	79.5	80.7	80.2	85.0	87.7	84.4	84
20	4000	86.4	84.8	82.1	80.8	79.3	80.3	79.9	84.6	87.8	85.1	84
21	5000	85.0	84.2	82.2	81.2	80.4	81.0	80.4	84.2	87.0	84.0	84
22	6300	88.4	84.6	82.4	82.1	79.9	81.4	81.1	85.3	86.9	85.0	84
23	8000	90.0	86.3	83.0	82.8	79.7	82.1	81.7	85.4	86.5	85.0	84
24	10000	89.1	88.2	88.9	86.8	82.6	83.9	83.6	87.2	88.6	86.4	86
25	12500	86.5	84.7	85.5	85.6	81.5	84.1	84.0	86.6	87.8	85.9	85
26	16000	87.3	84.1	83.8	83.6	81.1	84.5	85.4	88.7	90.6	90.1	90
27	20000	85.9	86.5	85.4	84.5	82.7	83.4	82.4	85.0	91.5	91.0	91

FOLDOUT FRAME

44

ED FROM THE ORIGINAL DATA.

CONFIGURATION NO 300  
 SPEED = 2458. RPM  
 PERCENT SPEED = 65.0

LOSSLESS ARRAY

FT RADIUS WITH NO ATMOSPHERIC ATTENUATION  
 POWER AND DIRECTIVITY COMPUTATIONS)

ORIGINAL PAGE IS  
 OF POOR QUALITY

90. 100. 110. 120. 130. 150.

97.6 101.0 104.3 103.9 102.9 99.1

81.0	81.3	85.8	86.7	88.2	91.8
82.7	84.8	87.7	88.3	88.8	89.8
85.3	88.8	93.2	90.5	92.2	89.5
85.5	88.5	90.9	91.9	91.7	88.9
83.4	88.2	89.5	92.0	91.2	86.9
81.7	85.4	87.2	89.2	89.0	83.5
84.7	87.5	90.5	92.0	90.4	84.5
84.6	86.4	92.7	93.9	92.7	83.6
85.4	89.4	91.4	92.2	88.7	83.2
85.4	90.1	93.4	91.8	88.6	81.6
84.9	87.8	91.9	89.8	86.4	81.8
83.8	86.8	90.5	88.6	86.5	80.1
82.0	85.8	88.2	89.3	86.2	80.3
82.1	85.2	89.2	89.7	85.9	81.1
86.1	88.3	93.8	92.5	88.1	84.1
78.6	82.6	85.7	84.9	83.7	78.4
78.8	83.3	86.3	84.8	83.6	77.5
81.3	86.3	89.6	88.4	88.1	79.4
80.2	85.0	87.7	84.4	84.7	77.0
79.9	84.6	87.8	85.1	84.3	75.8
80.4	84.2	87.0	84.0	84.5	75.2
81.1	85.3	86.9	85.0	84.9	75.4
81.7	85.4	86.5	85.0	84.4	74.7
83.6	87.2	88.6	86.4	86.7	76.7
84.0	86.6	87.8	85.9	85.5	74.9
85.4	88.7	90.6	90.1	90.8	79.3
82.4	85.0	91.5	91.0	91.7	90.1

44

FOLDOUT FRAME

2

*SPL* LOSSLESS DATA AT 100 FCCT RADIUS

QCSEE OTW ENGINE TEST

BULK ABSORBER INLET

3000 FT. RUNWAY CONF.

ENGINE ALONE TEST

READING NUMBERS = 53 54 64

CONFIGURATION NC = 300

SPEED = 3063. RPM

TEMPERATURE = 57.0 F

RELATIVE HUMIDITY = 35.0 PC

*SIDELINE PLANE*

BCOM MICROPHONES - LOSSLESS DATA

MIC #	13	14	15	16	17
R	0.	17.	31.	43.	54.
THETA, $\theta_s$	90.	90.	90.	90.	90.
Z	106.	98.	91.	86.	81.
DISTANCE	91.	85.	82.	83.	86.
PHI, $\phi$	0.	11.	22.	31.	39.

INDEX	FREQ					
1	50.	85.3	88.2	87.6	87.7	87.3
2	63.	86.8	90.7	89.1	90.2	88.8
3	80.	88.1	92.7	91.3	93.7	91.8
4	100.	89.7	91.9	90.3	91.0	90.7
5	125.	88.5	92.6	90.1	91.9	90.8
6	160.	88.3	90.7	90.8	91.5	90.8
7	200.	89.8	91.9	92.1	93.4	91.8
8	250.	90.3	91.7	92.5	91.9	92.7
9	315.	89.0	91.4	92.0	92.2	92.4
10	400.	89.5	90.8	91.1	91.9	93.5
11	500.	89.0	90.1	91.0	92.2	93.0
12	630.	88.1	90.0	90.5	92.3	93.2
13	800.	88.2	90.3	91.2	92.8	93.1
14	1000.	86.1	89.5	89.4	90.3	90.3
15	1250.	86.5	89.9	90.1	90.9	90.5
16	1600.	89.4	92.8	93.2	93.3	93.1
17	2000.	83.5	86.4	86.6	87.2	87.5
18	2500.	84.6	87.6	87.1	88.1	87.9
19	3150.	86.9	89.6	89.2	90.5	90.7
20	4000.	85.3	88.3	87.0	88.8	89.5
21	5000.	84.7	88.0	86.8	89.3	89.3
22	6300.	84.7	88.6	86.4	89.9	89.3
23	8000.	83.0	88.1	84.1	89.0	88.4
24	10000.	84.4	88.5	83.5	89.5	89.2
25	12500.	84.8	88.5	82.4	89.5	89.1
26	16000.	84.6	89.1	82.0	91.0	89.8
27	20000.	81.5	85.8	81.3	87.8	86.1

OASPL 101.6 104.5 103.8 105.3 105.2

FOLDOUT FRAME

64

SPEED = 3063. RPM

PERCENT SPEED 81.0

FGK 14320

VE HUMIDITY = 35.0 PC

BAROMETER = 29.30 IN HG

XMU .550

11 1/2" DOOR

45

SS. 22

FOLDOUT FRAME

2



DATA OF 427. SUBSET NO. 22. READINGS 53 54 64

GCSEE CTW ENGINE TEST  
BULK ABSORBER INLET  
3000 FT. RUNWAY CNF.  
ENGINE ALONE TEST

ORIGINAL PAGE IS  
OF POOR QUALITY

SPL LOSSLESS ARRAY

FLYOVER PLANE DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERE  
(FOR POWER AND DIRECTIVITY COMPUTATION)

ENGINE CENTERLINE MICROPHONES

ANGLE  $\theta$  60. 90. 120.

COMPUTED CASPL 104.8 108.4 112.0

BAND FREQUENCY

1	50	88.5	91.5	95.7
2	63	90.2	93.5	97.4
3	80	91.5	95.9	97.7
4	100	90.2	94.9	96.9
5	125	88.0	94.2	95.0
6	160	85.1	91.4	91.4
7	200	82.1	87.6	96.4
8	250	85.7	90.9	104.4
9	315	91.6	96.6	103.6
10	400	92.4	99.3	101.4
11	500	91.1	99.6	97.6
12	630	89.0	95.1	99.0
13	800	90.4	95.9	98.4
14	1000	89.2	93.1	96.9
15	1250	90.3	92.0	96.3
16	1600	95.3	94.5	99.6
17	2000	87.5	90.2	92.2
18	2500	90.4	90.0	94.0
19	3150	94.5	92.9	96.5
20	4000	90.4	91.1	93.1
21	5000	90.0	90.3	93.8
22	6300	92.6	91.9	92.9
23	8000	88.0	88.8	90.3
24	10000	90.7	89.8	90.6
25	12500	88.6	90.1	90.5
26	16000	89.0	90.7	92.6
27	20000	90.5	96.9	96.8

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FOLDOUT FRAME /

CONFIGURATION NC 300  
SPEED = 3063. RPM  
PERCENT SPEED = 81.0

ORIGINAL PAGE IS  
OF POOR QUALITY

LOSSLESS ARRAY

FT RADIUS WITH NO ATMOSPHERIC ATTENUATION  
POWER AND DIRECTIVITY (COMPUTATIONS)

46

FOLDOUT FRAME

2

DATA OF 427. SUBSET NO. 22. READINGS 53 54 64

SIX DECIBELS HAVE BEEN SUBTRACTED FROM THE ORIGINAL DATA.

QCSEE OTW ENGINE TEST  
BULK ABSORBER INLET  
3000 FT. RUNWAY CCNF.  
ENGINE ALONE TEST

SPL LOSSLESS ARRAY

FLYOVER PLANE DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERE  
(FOR POWER AND DIRECTIVITY COMPUTATION)

ANGLE,  $\theta$  0. 30. 50. 60. 70. 80. 90. 100. 110. 120. 130.  
COMPUTED DASPL 104.4 102.8 103.4 101.8 102.6 103.3 104.6 107.4 110.2 111.3 109.9

BAND FREQUENCY

1	50	81.3	80.2	84.2	83.5	84.7	86.0	84.3	87.2	88.3	93.0	94.7
2	63	82.3	81.2	85.0	86.2	85.5	86.3	87.2	89.3	91.2	95.2	97.0
3	80	88.0	84.5	86.3	87.8	88.0	88.3	90.2	92.5	94.7	97.0	97.7
4	100	89.0	84.2	87.2	87.7	88.9	89.9	90.4	93.0	95.0	97.7	97.7
5	125	86.9	84.7	86.4	87.0	89.0	88.0	89.5	92.7	95.7	98.0	98.0
6	160	84.9	84.7	85.7	86.9	88.2	87.5	89.5	92.2	95.2	98.5	98.5
7	200	94.7	85.7	86.5	86.5	87.7	89.2	91.2	93.2	95.2	99.5	98.0
8	250	82.2	86.2	85.6	87.4	90.4	91.6	91.4	94.4	99.4	102.2	98.0
9	315	81.7	84.2	87.1	90.2	91.1	90.7	93.1	96.4	98.1	99.9	96.0
10	400	79.6	83.6	88.1	88.4	89.9	90.3	94.4	97.4	100.4	100.1	97.0
11	500	79.4	82.4	87.4	88.4	89.4	92.6	94.6	95.6	99.1	98.8	94.0
12	630	81.8	82.0	86.8	87.0	89.5	90.5	93.5	95.3	99.3	97.0	94.0
13	800	84.3	82.7	86.8	87.2	89.2	90.2	91.3	94.0	97.2	96.2	93.0
14	1000	86.6	84.4	85.7	85.9	87.6	89.2	88.2	91.6	94.9	94.7	92.0
15	1250	92.0	88.3	88.5	86.7	87.1	88.3	88.8	92.3	95.0	94.5	91.0
16	1600	97.3	93.3	92.8	90.6	89.6	92.3	90.6	95.4	99.3	98.6	93.0
17	2000	89.0	87.3	86.0	84.6	84.2	85.1	86.0	89.1	92.0	90.5	87.0
18	2500	93.0	91.2	90.4	86.7	87.7	86.7	87.5	90.9	93.0	92.0	88.0
19	3150	96.7	95.7	95.5	90.4	91.0	88.5	89.3	93.2	95.7	93.3	90.0
20	4000	92.2	91.4	90.6	87.4	87.1	87.3	87.8	91.4	93.3	91.3	87.0
21	5000	91.6	90.7	90.4	87.1	87.9	87.6	88.3	91.6	92.6	90.8	88.0
22	6300	90.9	88.8	90.4	86.6	87.0	87.4	88.4	91.6	92.7	91.1	88.0
23	8000	89.3	87.1	88.5	85.4	85.2	85.5	86.7	90.0	91.0	89.0	86.0
24	10000	88.5	87.2	88.9	85.4	84.5	86.1	87.8	90.5	91.6	89.3	88.0
25	12500	87.2	87.8	88.0	84.8	83.7	86.2	87.7	90.7	92.0	90.5	87.0
26	16000	88.5	86.5	88.6	85.0	84.9	87.3	88.4	91.3	94.2	93.0	90.0
27	20000	92.5	92.7	92.2	91.2	91.4	91.3	91.7	92.5	94.6	102.2	93.0

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FOLDOUT FRAME /

ED FROM THE ORIGINAL DATA.

CONFIGURATION NO 300

SPEED = 3063. RPM

PERCENT SPEED = 81.0

LOSSLESS ARRAY

FT RADIUS WITH NO ATMOSPHERIC ATTENUATION  
(POWER AND DIRECTIVITY COMPUTATIONS)

90.	100.	110.	120.	130.	150.
104.6	107.4	110.2	111.3	109.0	105.6

84.3	87.2	88.3	93.0	94.0	99.7
87.2	89.3	91.2	95.2	97.0	98.5
90.2	92.5	94.7	97.0	97.8	97.7
90.4	93.0	95.0	97.7	97.0	91.3
89.5	92.7	95.7	98.0	98.5	91.5
89.5	92.2	95.2	98.5	98.0	92.2
91.2	93.2	95.2	99.5	98.5	92.9
91.4	94.4	95.4	102.2	98.6	88.3
93.1	96.4	98.1	99.9	96.6	89.2
94.4	97.4	100.4	100.1	97.6	86.3
94.6	95.6	99.1	98.8	94.9	85.6
93.5	95.3	99.3	97.0	94.1	84.6
91.3	94.0	97.2	96.2	93.3	86.3
88.2	91.6	94.9	94.7	92.7	86.1
88.8	92.3	95.0	94.5	91.0	85.5
90.6	95.4	99.3	98.6	93.9	88.6
86.0	89.1	92.0	90.5	87.3	83.0
87.5	90.9	93.0	92.0	88.5	83.2
89.3	93.2	95.7	93.3	90.0	84.3
87.8	91.4	93.3	91.3	87.6	82.1
88.3	91.6	92.6	90.8	88.1	81.3
88.4	91.6	92.7	91.1	88.2	80.6
86.7	90.0	91.0	89.0	86.7	78.8
87.8	90.5	91.6	89.3	88.7	78.8
87.7	90.7	92.0	90.5	87.6	78.8
88.4	91.3	94.2	93.0	90.5	81.2
91.7	92.5	94.6	102.2	93.1	91.9

*SPL* LOSSLESS DATA AT 100 FOOT RADIUS

QCSEE CTW ENGINE

BULK ABSORBER INLET

ORIGINAL PAGE IS  
OF POOR QUALITY

FULLY SUPPRESSED ENGINE

ENGINE WITH APPROACH FLAPS

READING NUMBERS = 65 66 67

CONFIGURATION NC = 112

SPEED = 1795. RPM

TEMPERATURE = 68.0 F

RELATIVE HUMIDITY = 51.0 PC

*SIDELINE PLANE*

BOOM MICROPHONES - LOSSLESS DATA

MIC # 14 15 16 17

R 0. 31. 43. 55.

THETA,  $\theta_s$  90. 90. 90. 90.

Z 106. 91. 96. 81.

DISTANCE 91. 82. 93. 86.

PHI,  $\phi$  0. 22. 31. 39.

INDEX FREQ

1	50.	82.6	83.3	85.3	89.0
2	63.	83.1	80.9	80.7	81.7
3	80.	81.0	79.6	80.0	80.4
4	100.	80.6	78.9	78.4	80.5
5	125.	79.5	78.4	77.9	80.2
6	160.	77.7	76.6	78.9	80.2
7	200.	78.3	78.8	80.7	81.9
8	250.	77.2	78.1	79.2	80.1
9	315.	76.0	77.8	78.4	79.4
10	400.	74.4	75.1	76.1	76.4
11	500.	71.6	72.5	72.6	73.6
12	630.	72.6	70.5	70.9	71.5
13	800.	75.1	75.5	76.5	77.5
14	1000.	74.3	70.2	71.1	71.8
15	1250.	73.0	69.7	69.8	70.4
16	1600.	70.5	68.1	68.2	68.9
17	2000.	67.4	64.7	65.4	66.6
18	2500.	66.5	63.8	64.3	65.0
19	3150.	65.8	62.2	63.2	64.2
20	4000.	68.9	65.6	67.9	68.6
21	5000.	69.3	62.5	64.7	65.3
22	6300.	73.7	66.1	67.9	68.7
23	8000.	71.5	63.5	67.0	68.1
24	10000.	70.1	60.2	64.2	64.3
25	12500.	74.7	58.5	63.3	63.5
26	16000.	68.4	58.3	58.9	59.0
27	20000.	65.1	62.3	62.4	63.7

CASPL 91.0 89.5 90.9 92.5

FOLDOUT FRAME /

ORIGINAL PAGE IS  
OF POOR QUALITY

67

SPEED = 1795. RPM

PERCENT SPEED 47.0

FGK 4148

E HUMIDITY = 51.0 PC

BAROMETER = 29.30 IN HG

XM11 .269

S.S. 23

48

FOLDOUT FRAME

2

DATA OF 606. SUBSET NO. 23. READINGS 65 66 67

QCSEE CTW ENGINE  
PULK ABSORBER INLET  
FULLY SUPPRESSED ENGINE  
ENGINE WITH APPROACH FLAPS

ORIGINAL PAGE IS  
OF POOR QUALITY

SPL LCSSLESS ARRAY

FLYOVER PLANE DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERIC  
(FOR POWER AND DIRECTIVITY COMPUTATION)

ENGINE CENTERLINE MICROPHONES

ANGLE,  $\theta$ , 60. 90. 120.  
COMPUTED CASPL 95.2 94.8 95.5

BAND FREQUENCY

1	50	89.0	90.9	91.9
2	63	86.2	87.4	88.4
3	80	95.2	83.5	85.4
4	100	83.2	83.4	81.4
5	125	79.9	80.2	78.7
6	160	77.9	79.4	79.5
7	200	78.7	81.1	81.4
8	250	79.1	80.6	81.6
9	315	78.1	78.4	79.1
10	400	76.5	77.3	75.0
11	500	74.0	75.0	73.7
12	630	72.4	73.5	72.5
13	800	85.9	78.7	79.0
14	1000	77.6	72.7	73.1
15	1250	76.1	70.1	71.5
16	1600	78.7	69.5	68.9
17	2000	73.0	67.3	66.8
18	2500	74.8	66.3	66.8
19	3150	74.2	65.2	64.2
20	4000	74.6	70.3	68.3
21	5000	75.4	64.4	65.9
22	6300	78.6	67.7	68.6
23	8000	82.5	66.2	64.8
24	10000	78.8	64.6	62.1
25	12500	71.7	65.4	65.5
26	16000	71.0	70.5	70.5
27	20000	78.9	77.5	77.5

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FOLDOUT FRAME /

CONFIGURATION NC 112  
SPEED = 1795. RPM  
PERCENT SPEED = 47.0

S L E S S   A R R A Y

US WITH NO ATMOSPHERIC ATTENUATION  
(DIRECTIVITY COMPUTATIONS)

ORIGINAL PAGE IS  
OF POOR QUALITY

C-2

49

FOLDOUT FRAME

2



DATA OF 606. SUBSET NO. 23. READINGS 65 66 67

SIX DECIBELS HAVE BEEN SUBTRACTED FROM THE ORIGINAL DATA.  
 GCSEE CTW ENGINE  
 BULK ABSORBER INLET  
 FULLY SUPPRESSED ENGINE  
 ENGINE WITH APPROACH FLAPS

ORIGINAL PAGE IS  
 OF POOR QUALITY.

SPL LOSSLESS ARRAY

FLYOVER PLANE DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERIC ATT  
 (FOR POWER AND DIRECTIVITY COMPUTATIONS)

ANGLE 0. 30. 40. 50. 60. 70. 80. 90. 100. 140. 150. 160

COMPUTED CASPL 99.3 95.1 93.5 92.0 91.4 90.4 90.7 90.2 91.2 90.9 92.3 93

BAND FREQUENCY

1	50	90.3	86.7	87.3	85.7	85.2	83.5	85.7	86.3	86.5	86.5	87.0	87
2	63	89.8	83.5	81.8	80.3	80.5	79.3	82.2	80.8	82.0	83.8	84.5	86
3	80	89.7	81.0	78.5	78.0	79.3	79.3	80.8	77.5	80.5	80.0	82.5	84
4	100	88.5	81.0	79.0	80.2	80.5	78.2	79.7	77.8	80.0	79.3	80.8	81
5	125	87.5	77.5	80.2	80.0	77.4	77.7	76.7	76.7	79.2	75.8	78.9	79
6	160	87.4	78.8	78.7	76.7	77.0	77.9	77.7	76.2	76.8	74.8	77.0	79
7	200	87.0	78.8	81.9	78.4	78.5	78.9	79.9	79.0	80.5	80.2	78.7	80
8	250	84.9	79.2	78.4	77.2	76.6	76.6	76.6	78.4	78.6	76.7	78.2	79
9	315	84.4	76.4	75.2	75.6	75.2	75.7	75.1	74.9	77.7	73.1	74.1	76
10	400	82.8	72.4	72.1	71.3	73.1	72.9	72.3	72.9	75.9	71.8	73.3	74
11	500	81.1	71.8	71.7	69.5	68.5	69.6	69.8	70.5	70.1	69.0	71.1	73
12	630	78.8	72.5	70.5	70.2	70.3	69.7	67.2	68.7	69.3	67.2	69.2	71
13	800	77.7	85.0	81.4	82.0	78.5	77.9	74.0	75.4	73.2	74.0	76.0	74
14	1000	75.4	77.7	74.7	74.6	72.9	71.1	69.7	67.9	69.2	70.9	72.6	71
15	1250	73.1	77.8	74.6	73.3	71.6	69.8	69.3	66.9	67.3	70.3	70.6	70
16	1600	71.0	82.4	79.2	77.5	75.9	72.7	69.3	67.5	67.0	66.7	68.7	69
17	2000	68.4	78.5	74.8	72.5	70.4	68.0	65.4	63.4	63.6	63.1	64.6	66
18	2500	66.1	81.5	77.3	75.0	72.0	68.8	65.3	62.6	62.8	60.4	64.1	65
19	3150	64.5	79.7	76.9	73.4	70.9	67.9	63.9	61.5	61.2	60.0	63.0	64
20	4000	62.7	78.9	76.8	73.6	72.4	70.4	66.5	62.0	66.3	62.8	64.9	65
21	5000	61.7	78.8	76.6	73.1	72.2	69.4	64.5	61.9	62.2	62.6	65.2	65
22	6300	62.3	84.4	80.2	77.9	76.9	75.3	66.0	62.2	62.8	66.5	69.0	68
23	8000	63.8	86.2	83.4	79.2	80.3	79.0	69.3	63.1	62.3	63.1	66.2	65
24	10000	66.1	79.6	78.6	76.6	76.8	76.5	66.7	61.1	59.6	60.9	65.1	62
25	12500	69.5	74.0	71.7	68.8	69.2	67.3	61.2	59.9	59.6	62.4	66.4	63
26	16000	74.5	73.7	70.7	68.5	69.2	67.6	64.3	64.4	64.4	64.6	64.5	64
27	20000	81.5	73.6	72.1	72.5	73.0	72.5	72.1	71.5	71.5	71.6	71.3	73

50

FOLDOUT FRAME 1

FROM THE ORIGINAL DATA.

CONFIGURATION NO 112

SPEED = 1795. RPM

PERCENT SPEED = 47.0

MISSLESS ARRAY

ORIGINAL PAGE IS  
OF POOR QUALITYRADIUS WITH NO ATMOSPHERIC ATTENUATION  
(AND DIRECTIVITY COMPUTATIONS)

30. 90. 100. 140. 150. 160. 180.

1.7 90.2 91.2 90.9 92.3 93.0 93.6

5.7 86.3 86.5 86.5 87.0 87.5 86.2

2.2 80.8 82.0 83.8 84.5 86.0 87.5

0.8 77.5 80.5 80.0 82.5 84.2 85.5

9.7 77.8 80.0 79.3 80.8 81.8 84.0

6.7 76.7 79.2 75.8 78.9 79.9 82.2

7.7 76.2 76.8 74.8 77.0 79.2 80.5

9.9 79.0 80.5 80.2 78.7 80.7 80.9

6.6 78.4 78.6 76.7 78.2 79.6 79.4

5.1 74.9 77.7 73.1 74.1 76.9 76.9

2.3 72.9 75.9 71.8 73.3 74.8 74.9

9.8 70.5 70.1 69.0 71.1 73.0 72.6

7.2 68.7 69.3 67.2 69.2 71.2 71.7

4.0 75.4 73.2 74.0 76.0 74.9 75.2

9.7 67.9 69.2 70.9 72.6 71.6 71.2

8.3 66.9 67.3 70.3 70.6 70.9 69.1

9.3 67.5 67.0 66.7 68.7 69.3 68.0

5.4 63.4 63.6 63.1 64.6 66.1 66.5

5.3 62.6 62.8 60.4 64.1 65.3 65.1

3.9 61.5 61.2 60.0 63.0 64.2 64.0

6.5 62.0 66.3 62.8 64.9 65.9 64.8

4.5 61.9 62.2 62.6 65.2 65.1 65.6

6.0 62.2 62.8 66.5 69.0 68.0 69.3

9.3 63.1 62.3 63.1 66.2 65.1 66.7

6.7 61.1 59.6 60.9 65.1 62.7 65.8

1.2 59.9 59.6 62.4 66.4 63.2 68.7

4.3 64.4 64.4 64.6 64.5 64.3 67.4

2.1 71.5 71.5 71.6 71.3 73.5 70.7

# *SPL* LOSSLESS DATA AT 100 FEET RADIUS

QCSEE OTW ENGINE

BULK ABSORBER INLET

FULLY SUPPRESSED ENGINE

ENGINE WITH APPROACH FLAPS

READING NUMBERS = 68 69 70

CONFIGURATION NC = 112

SPEED = 2480. RPM

TEMPERATURE = 69.0 F

RELATIVE HUMIDITY = 53.0 PC

## *STOBLING PLANE*

BOOM MICROPHONES - LOSSLESS DATA

MIC # 14 15 16 17

R 0. 31. 43. 55.

THETA,  $\theta_s$  90. 90. 90. 90.

Z 106. 91. 86. 81.

DISTANCE 91. 82. 83. 86.

PHI,  $\phi$  0. 22. 31. 39.

INDEX FREQ

1	50.	88.1	88.8	92.0	92.5
2	63.	86.9	88.2	88.2	89.5
3	80.	89.0	88.6	89.5	90.2
4	100.	88.1	86.4	87.7	89.2
5	125.	87.0	86.8	87.7	88.5
6	160.	84.5	86.1	87.9	89.4
7	200.	86.2	86.8	89.4	89.9
8	250.	86.3	88.1	90.0	89.9
9	315.	84.9	87.6	88.9	89.4
10	400.	82.7	85.5	87.6	87.6
11	500.	81.7	84.0	85.8	85.9
12	630.	80.2	81.5	82.4	82.8
13	800.	80.6	79.4	81.5	82.1
14	1000.	80.5	79.1	80.5	81.2
15	1250.	83.3	80.7	82.3	82.4
16	1600.	77.0	75.4	76.2	77.2
17	2000.	76.4	75.0	75.9	76.3
18	2500.	77.2	75.2	75.8	76.7
19	3150.	76.5	72.9	74.3	75.2
20	4000.	76.5	72.4	73.9	74.7
21	5000.	76.4	71.4	73.5	74.4
22	6300.	77.8	71.0	73.6	74.6
23	8000.	77.8	69.1	72.9	73.3
24	10000.	78.8	68.7	73.5	73.2
25	12500.	76.5	64.3	69.7	70.7
26	16000.	75.3	59.7	68.1	68.7
27	20000.	69.2	61.6	72.0	72.9

CASPL 97.7 98.0 99.7 100.4

FOLDOUT FRAME 1

PEED = 2480. RPM

PERCENT SPEED 65.0

FGK 8733

HUMIDITY = 53.0 PC

BAROMETER = 29.30 IN HG

XM11 .412

DATA OF 606. SUBSET NO. 24. READINGS 68 69 70 /

CCSEE CTW ENGINE  
BULK ABSORBER INLET  
FULLY SUPPRESSED ENGINE  
ENGINE WITH APPROACH FLAPS

ORIGINAL PAGE IS  
OF POOR QUALITY

SPL

LOSSLESS ARRAY

FLYOVER PLANE

DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERIC  
(FOR POWER AND DIRECTIVITY COMPUTATION)

ENGINE CENTERLINE MICROPHONES

ANGLE,  $\theta$  60. 90. 120.

COMPUTED CASPL 103.8 105.0 104.2

BAND FREQUENCY

1	50	98.9	99.9	101.2
2	63	93.4	97.4	94.9
3	80	94.5	96.4	93.4
4	100	94.0	95.4	90.4
5	125	91.2	91.9	89.9
6	160	87.5	89.7	87.0
7	200	86.7	89.7	89.9
8	250	88.4	90.1	90.9
9	315	88.1	89.1	88.4
10	400	86.8	89.6	86.5
11	500	83.5	88.0	84.8
12	630	82.0	84.9	83.4
13	800	82.2	83.2	82.9
14	1000	83.6	81.8	81.9
15	1250	90.1	82.3	83.3
16	1600	81.4	77.5	75.9
17	2000	82.3	78.3	76.1
18	2500	86.0	78.0	77.6
19	3150	83.2	76.4	73.8
20	4000	84.1	76.7	72.1
21	5000	84.1	74.1	73.0
22	6300	83.2	75.7	73.5
23	8000	93.9	73.0	69.8
24	10000	86.1	74.5	71.8
25	12500	82.9	74.9	75.0
26	16000	79.5	79.8	79.8
27	20000	96.6	86.6	86.6

52

FOLDOUT FRAME /

CONFIGURATION NO 112  
SPEED = 2480. RPM  
PERCENT SPEED = 65.0

LOSSLESS ARRAY

ORIGINAL PAGE IS  
OF POOR QUALITY

RADIUS WITH NO ATMOSPHERIC ATTENUATION  
AND DIRECTIVITY COMPUTATIONS)

52

FOLDOUT FRAME 2

DATA CF 606. SUBSET NO. 24. READINGS 68 69 70

SIX DECIBELS HAVE BEEN SUBTRACTED FROM THE ORIGINAL DATA.

CCSEE CTH ENGINE

BULK ABSORBER INLET

FULLY SUPPRESSED ENGINE

ENGINE WITH APPROACH FLAPS

SPL LOSSLESS ARRAY

FLYOVER PLANE DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERIC AT  
(FOR POWER AND DIRECTIVITY COMPUTATIONS)

ANGLE, $\theta$	0.	30.	40.	50.	60.	70.	80.	90.	100.	140.	150.	180.
COMPUTED CASPL	99.7	102.2	101.7	100.8	100.1	99.8	99.6	99.8	101.9	101.4	105.7	100.0

BAND FREQUENCY

BAND	FREQUENCY	0.	30.	40.	50.	60.	70.	80.	90.	100.	140.	150.	180.
1	50	93.3	96.5	94.7	94.5	93.5	93.0	93.0	94.0	97.8	98.0	101.5	100.0
2	63	91.8	91.7	92.5	90.7	88.8	90.0	91.2	91.5	92.8	94.7	98.7	100.0
3	80	89.5	89.3	87.3	87.0	90.0	90.7	89.5	90.0	91.0	91.8	98.0	100.0
4	100	88.8	87.3	88.2	95.5	91.0	89.5	89.0	89.2	88.3	88.8	95.3	90.0
5	125	88.5	86.9	89.9	89.4	87.2	87.7	87.9	87.4	89.4	86.7	93.0	90.0
6	160	88.0	87.5	88.2	84.9	85.9	86.9	87.2	86.7	88.2	85.2	89.0	90.0
7	200	89.5	87.2	86.4	87.0	85.9	88.0	88.5	88.5	90.7	85.7	88.2	90.0
8	250	85.6	85.1	86.4	86.2	85.7	86.1	87.1	88.1	89.9	85.2	89.2	90.0
9	315	84.8	84.2	85.1	94.4	94.2	86.4	85.6	84.7	87.1	81.9	95.7	90.0
10	400	84.9	82.8	81.6	91.8	84.1	84.1	83.4	85.1	85.9	79.8	84.6	80.0
11	500	83.1	79.1	79.6	79.8	79.6	81.1	82.3	83.8	83.0	77.0	83.1	80.0
12	630	81.0	77.3	78.0	78.0	78.5	79.5	79.0	80.7	80.2	75.3	81.8	80.0
13	800	79.4	79.0	78.4	78.4	78.2	79.4	80.2	79.5	80.0	76.7	81.7	80.0
14	1000	76.7	83.6	83.2	82.4	80.4	79.7	79.9	77.9	78.7	77.4	80.9	80.0
15	1250	74.6	91.0	89.6	89.3	86.5	84.5	84.0	79.6	81.3	79.8	82.3	80.0
16	1600	72.2	84.9	82.9	91.8	78.7	77.0	75.5	74.5	74.2	72.8	77.3	80.0
17	2000	70.1	86.3	84.6	82.5	79.8	77.6	75.3	73.5	73.6	72.3	76.0	70.0
18	2500	67.8	89.4	87.9	87.3	82.6	81.6	76.9	74.4	74.9	71.9	75.9	70.0
19	3150	65.7	86.8	85.8	84.3	81.2	79.0	75.2	72.0	71.3	71.5	74.7	70.0
20	4000	64.4	86.7	85.7	84.9	83.2	79.5	75.7	71.4	71.0	71.4	73.7	70.0
21	5000	62.6	86.6	85.8	83.6	82.9	79.6	75.8	71.4	70.6	71.1	73.3	70.0
22	6300	62.2	87.0	86.7	84.3	82.5	80.0	75.6	71.3	70.1	71.3	73.6	70.0
23	8000	63.6	87.6	87.1	84.0	82.2	78.2	74.4	69.5	67.8	69.5	72.0	70.0
24	10000	65.7	88.7	89.0	85.0	84.9	80.2	77.0	70.6	68.1	69.2	72.5	70.0
25	12500	69.0	84.0	84.1	81.5	82.4	77.4	76.4	69.6	68.9	68.8	69.6	70.0
26	16000	73.8	80.7	79.6	77.9	78.0	74.9	74.0	73.7	73.8	73.8	73.7	80.0
27	20000	80.6	80.8	80.7	80.3	79.9	80.3	80.5	80.6	80.6	80.6	80.6	90.0

53

FOLDOUT FRAME /

D FROM THE ORIGINAL DATA.

CONFIGURATION NO 112  
 SPEED = 2480. RPM  
 PERCENT SPEED = 65.0

## LOSSLESS ARRAY

FT RADIUS WITH NO ATMOSPHERIC ATTENUATION  
 (WEAP AND DIRECTIVITY COMPUTATIONS)

80. 90. 100. 140. 150. 160. 180.

99.6 99.8 101.9 101.4 105.7 108.9 105.7

93.0	94.0	97.8	98.0	101.5	104.8	99.3
91.2	91.5	92.8	94.7	98.7	101.3	98.3
89.5	90.0	91.0	91.8	98.0	101.0	97.7
89.0	89.2	88.3	88.8	95.3	97.5	95.8
87.9	87.4	86.4	86.7	93.0	96.0	94.7
87.2	86.7	88.2	85.2	89.0	93.4	93.2
88.5	88.5	90.7	85.7	88.2	92.7	93.2
87.1	88.1	89.9	85.2	89.2	91.9	91.7
85.6	84.7	87.1	81.9	85.7	90.2	89.2
83.4	85.1	85.9	79.8	84.6	88.6	88.1
82.3	83.8	83.0	77.0	83.1	86.6	85.6
79.0	80.7	80.2	75.3	81.8	85.7	84.5
80.2	79.5	80.0	76.7	81.7	84.7	84.2
79.9	77.9	78.7	77.4	80.9	83.7	82.9
84.0	79.6	81.3	79.8	82.3	83.6	82.6
75.5	74.5	74.2	72.8	77.3	80.5	80.7
75.3	73.5	73.6	72.3	76.0	79.5	79.3
76.9	74.4	74.3	71.9	75.9	77.8	78.3
75.2	72.0	71.3	71.5	74.7	76.8	77.3
75.7	71.4	71.0	71.4	73.7	75.7	76.5
75.8	71.4	70.6	71.1	73.3	74.6	75.4
75.6	71.3	70.1	71.3	73.6	73.8	75.3
74.4	69.5	67.8	69.5	72.0	73.6	73.8
77.0	70.6	68.1	69.2	72.5	75.7	73.7
76.4	69.6	68.9	68.8	69.6	79.0	71.9
74.0	73.7	73.8	73.8	73.7	83.8	73.5
80.5	80.6	80.6	80.6	80.6	90.6	80.6



# *SPL* LOSSLESS DATA AT 100 FEET RADIUS

QCSEE OTW ENGINE

BULK ABSORBER INLET

FULLY SUPPRESSED ENGINE

ENGINE WITH APPROACH FLAPS

READING NUMBERS = 77 78 79

CONFIGURATION NC = 112

SPEED = 3090. RPM

PE

TEMPERATURE = 70.0 F

RELATIVE HUMIDITY = 51.0 PC

*STANDARD PLANE*

BOOM MICROPHONES - LOSSLESS DATA

MIC #	14	15	16	17
R	0.	31.	43.	55.
THETA, $\theta_s$	90.	90.	90.	90.
Z	106.	91.	86.	81.
DISTANCE	91.	82.	83.	86.
PHI, $\phi$	0.	22.	31.	39.

INDEX	FREQ				
1	50.	96.5	95.9	97.5	97.4
2	63.	95.5	95.3	94.2	96.2
3	80.	96.0	93.8	94.5	98.2
4	100.	95.0	93.4	94.2	96.0
5	125.	95.2	94.4	95.5	96.7
6	160.	93.3	92.8	93.9	96.4
7	200.	93.9	93.1	95.0	95.5
8	250.	92.2	92.8	94.0	96.1
9	315.	91.5	93.8	94.4	95.1
10	400.	91.2	93.2	94.2	94.8
11	500.	89.7	91.5	93.1	92.8
12	630.	88.4	89.0	90.3	91.1
13	800.	87.9	87.9	89.1	89.6
14	1000.	87.3	86.9	87.8	88.2
15	1250.	86.7	86.6	87.0	87.4
16	1600.	87.0	85.4	85.5	86.4
17	2000.	83.2	82.2	83.4	84.0
18	2500.	83.5	81.9	83.2	84.0
19	3150.	85.5	84.0	85.1	85.8
20	4000.	84.4	81.2	82.5	83.2
21	5000.	83.7	80.2	81.7	82.4
22	6300.	84.1	79.5	82.0	82.2
23	8000.	82.2	75.9	79.7	80.3
24	10000.	81.5	73.4	78.0	78.2
25	12500.	80.2	68.7	74.2	74.9
26	16000.	78.7	68.0	72.8	73.0
27	20000.	75.3	72.0	72.0	72.5

FOLDOUT FRAME /

54

OASPL 105.2 104.8 105.8 107.0

PEED = 3090. RPM

PERCENT SPEED 81.0

FGK 14094

HUMIDITY = 51.0 PC

BAROMETER = 29.30 IN HG

XMM .572

FOLDOUT FRAME 2

ME /

54

J.S. 25

DATA OF 606. SUBSET NO. 25. READINGS 77 78 79

QCSEE CTW ENGINE  
PULK ABSORBER INLET  
FULLY SUPPRESSED ENGINE  
ENGINE WITH APPROACH FLAPS

SPL LOSSLESS ARRAY

ORIGINAL PAGE IS  
OF POOR QUALITY

FLYOVER PLANE

DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERIC  
(FOR POWER AND DIRECTIVITY COMPUTATION)

ENGINE CENTERLINE MICROPHONES

ANGLE,  $\theta$  60. 90. 120.

COMPUTED CASPL 111.0 113.3 108.3

BAND FREQUENCY

1	50	105.7	109.0	104.2
2	63	101.0	106.9	101.5
3	80	102.5	103.9	97.5
4	100	102.4	102.2	95.2
5	125	98.5	99.0	95.0
6	160	94.9	97.7	92.7
7	200	93.6	95.9	93.1
8	250	94.4	95.7	93.7
9	315	93.9	96.1	91.9
10	400	93.0	96.8	91.3
11	500	91.3	95.0	90.9
12	630	90.2	93.5	89.0
13	800	89.9	91.7	88.2
14	1000	88.8	89.3	86.4
15	1250	89.7	87.8	85.1
16	1600	93.2	88.9	87.2
17	2000	87.6	85.3	81.3
18	2500	90.5	85.3	82.3
19	3150	95.4	88.5	84.4
20	4000	93.2	86.7	79.2
21	5000	93.5	84.8	79.5
22	6300	91.8	85.9	80.0
23	8000	90.7	82.2	74.1
24	10000	88.2	81.0	72.2
25	12500	84.7	77.8	75.1
26	16000	83.6	79.7	80.0
27	20000	86.1	86.9	86.9

55

FOLDOUT FRAME 1

CONFIGURATION NO 112  
SPEED = 3090. RPM  
PERCENT SPEED = 81.0

SSLESS ARRAY

RADIUS WITH NO ATMOSPHERIC ATTENUATION  
AND DIRECTIVITY COMPUTATIONS)

ORIGINAL PAGE IS  
OF POOR QUALITY

DATA OF 606. SUBSET NO. 25. READINGS 77 78 79

SIX DECIBELS HAVE BEEN SUBTRACTED FROM THE ORIGINAL DATA.  
 CCSEE CTW ENGINE  
 BULK ABSORBER INLET  
 FULLY SUPPRESSED ENGINE  
 ENGINE WITH APPROACH FLAPS

ORIGINAL PAGE IS  
 OF POOR QUALITY

SPL LOSSLESS ARRAY

FLYOVER PLANE DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERIC  
 (FOR POWER AND DIRECTIVITY COMPUTATION)

ANGLE,  $\theta$  0. 30. 40. 50. 60. 70. 80. 90. 100. 140. 150.

COMPUTED CASPL 99.4 107.2 107.3 107.2 106.7 106.5 107.6 108.4 108.8 109.0 115.2

BAND FREQUENCY

1	50	92.8	100.8	101.2	100.8	98.7	97.0	100.2	102.5	104.5	106.0	111.3
2	63	91.3	99.5	98.3	97.2	96.7	98.0	99.3	101.2	100.0	103.2	109.2
3	80	91.0	96.0	94.8	96.0	98.0	99.2	98.8	99.2	99.0	99.3	107.0
4	100	89.0	92.8	95.0	97.5	98.3	95.8	97.5	96.3	96.2	93.2	103.3
5	125	89.0	92.2	97.2	97.5	95.2	95.2	96.2	96.4	97.0	90.9	101.2
6	160	87.7	94.5	95.7	92.5	93.7	92.9	94.5	95.5	94.9	89.0	97.5
7	200	87.2	94.2	91.5	92.7	92.4	94.2	95.7	96.9	95.9	90.0	96.0
8	250	85.4	90.6	91.1	92.1	91.6	91.7	94.2	95.9	95.2	88.9	95.6
9	315	85.6	89.4	90.6	91.4	90.6	92.7	92.9	92.4	92.9	86.7	93.1
10	400	84.1	88.6	88.1	89.3	90.4	90.4	92.1	93.4	92.9	86.3	91.8
11	500	82.0	85.8	86.0	86.8	86.8	88.3	91.1	90.8	90.5	84.3	90.5
12	630	80.3	83.3	84.3	85.8	86.3	87.5	88.5	88.0	87.5	82.8	89.0
13	800	78.4	83.9	84.7	85.2	85.4	86.7	89.0	86.9	87.4	83.9	88.9
14	1000	75.8	84.1	84.4	84.2	85.2	85.2	87.6	85.1	85.9	84.4	87.7
15	1250	73.8	88.0	86.6	85.8	85.5	85.5	86.3	83.6	84.0	83.0	87.1
16	1600	71.4	94.0	91.5	90.7	88.7	88.0	85.7	84.5	86.0	82.9	86.2
17	2000	69.1	87.8	87.3	85.0	84.8	83.3	83.5	80.6	80.5	80.6	84.0
18	2500	67.3	91.0	91.1	88.5	88.0	86.0	84.8	81.5	81.1	79.8	83.4
19	3150	65.2	94.7	95.4	94.4	91.5	90.7	88.5	84.4	82.2	79.5	83.3
20	4000	63.5	91.7	91.7	91.2	90.5	87.2	85.0	81.2	80.4	79.5	82.2
21	5000	62.1	91.1	91.1	90.5	90.6	87.0	85.1	81.1	80.3	78.1	81.5
22	6300	62.4	90.8	90.6	89.9	89.8	87.3	84.8	81.5	80.2	78.2	81.7
23	8000	63.6	87.8	86.4	87.2	87.6	84.6	82.5	78.8	77.1	74.8	79.0
24	10000	65.8	86.2	84.8	81.6	84.0	82.9	80.9	77.3	75.7	75.8	78.6
25	12500	69.1	82.8	81.9	81.1	81.7	80.4	79.3	79.0	79.1	79.1	78.9
26	16000	73.9	84.0	84.5	83.9	84.7	83.8	83.9	83.9	83.9	83.9	83.9
27	20000	80.9	90.8	90.7	90.8	90.7	90.9	90.9	90.9	90.9	90.9	90.9

56

FOLDOUT FRAME 1

FROM THE ORIGINAL DATA.

CCNFIGURATION NO 112  
 SPEED = 3090. RPM  
 PERCENT SPEED = 81.0

C S S L E S S A R R A Y

ORIGINAL PAGE IS  
 OF POOR QUALITY

T RADIUS WITH NO ATMOSPHERIC ATTENUATION  
 ER AND DIRECTIVITY COMPUTATIONS)

80. 90. 100. 140. 150. 160. 180.

07.6 108.4 108.8 109.0 115.2 117.3 115.9

00.2	102.5	104.5	106.0	111.3	112.2	110.8
99.3	101.7	100.0	103.2	109.2	111.2	108.3
98.8	99.2	99.0	99.3	107.0	109.3	106.7
97.5	96.3	96.2	93.2	103.3	107.3	105.5
96.2	96.4	97.0	90.9	101.2	105.5	105.0
94.5	95.5	94.9	89.0	97.5	103.0	102.9
95.7	96.9	95.9	90.0	96.0	100.9	102.7
94.2	95.9	95.2	88.9	95.6	100.4	101.6
92.9	92.4	92.9	86.7	93.1	98.1	100.1
92.1	93.4	92.9	86.3	91.8	96.8	98.8
91.1	90.8	90.5	84.3	90.5	95.5	96.3
88.5	88.0	87.5	82.8	89.0	93.8	95.0
89.0	86.9	87.4	83.9	88.9	92.9	93.9
87.6	85.1	85.9	84.4	87.7	91.9	92.6
86.3	83.6	84.0	83.0	87.1	90.6	91.8
85.7	84.5	86.0	82.9	86.2	89.7	90.5
83.5	80.6	80.5	80.6	84.0	88.0	89.0
84.8	81.5	81.1	79.8	83.4	86.6	87.9
88.5	84.4	82.2	79.9	83.3	85.8	86.7
85.0	81.2	80.4	79.5	82.2	84.5	85.5
85.1	81.1	80.3	78.1	81.5	82.9	84.3
84.8	81.5	80.2	78.2	81.7	81.8	83.5
82.5	78.8	77.1	74.8	79.0	79.0	81.0
80.9	77.3	75.7	75.8	78.6	77.3	79.4
79.3	79.0	79.1	79.1	78.9	79.0	78.9
83.9	83.9	83.9	83.9	83.9	84.0	84.3
90.9	90.9	90.9	90.9	90.9	92.5	91.0

*SPL* LOSSLESS DATA AT 100 FEET RADIUS

QCSEE QTH ENGINE

BULK ABSORBER INLET

FULLY SUPPRESSED ENGINE

ENGINE WITH APPROACH FLAPS

READING NUMBERS = 74 75 76

CONFIGURATION NC = 112 SPEED = 3282. RPM

TEMPERATURE = 71.0 F RELATIVE HUMIDITY = 50.0 PC

*SIDELINE PLANE*

ROOM MICROPHONES - LOSSLESS DATA

MIC # 14 15 16 17

R 0. 31. 43. 55.

THETA,  $\theta$  90. 90. 90. 90.

Z 106. 91. 86. 81.

DISTANCE 91. 92. 83. 86.

PHI,  $\phi$  0. 22. 31. 39.

INDEX FREQ

1	50.	97.3	95.8	98.8	100.2
2	63.	96.1	95.9	96.2	97.9
3	80.	96.1	96.9	96.7	98.0
4	100.	96.6	95.1	96.7	98.2
5	125.	96.3	96.3	96.9	98.5
6	160.	94.2	95.1	96.4	98.7
7	200.	94.2	95.4	97.0	98.0
8	250.	93.5	94.6	96.2	97.9
9	315.	93.9	95.8	96.6	98.2
10	400.	92.4	95.1	95.7	96.6
11	500.	91.9	93.2	94.4	95.4
12	630.	89.9	91.5	91.8	93.3
13	800.	89.8	90.2	91.3	92.1
14	1000.	88.8	88.7	89.6	90.5
15	1250.	88.0	88.2	88.7	89.7
16	1600.	88.5	87.6	88.4	88.4
17	2000.	85.6	84.5	85.4	86.3
18	2500.	84.5	83.8	84.7	85.7
19	3150.	87.2	84.9	86.1	87.2
20	4000.	85.4	82.4	83.7	84.6
21	5000.	85.2	82.1	83.8	85.1
22	6300.	85.3	80.5	83.3	84.6
23	8000.	83.4	77.1	80.7	81.8
24	10000.	82.5	74.4	79.5	79.8
25	12500.	81.0	69.7	75.5	76.8
26	16000.	79.1	67.9	74.1	74.4
27	20000.	76.1	71.9	72.6	72.5

FOLDOUT FRAME /

CASPL 106.3 106.5 107.6 109.1

76

SPEED = 3282. RPM

PERCENT SPEED

86.0

FGK 16099

VE HUMIDITY = 50.0 PC

BAROMETER = 29.30 IN HG

X1711 .635

FRAME 1

51

FOLDOUT FRAME

2

S.S. 26



DATA OF 606. SUBSET NO. 26. READINGS 74 75 76

QCSEE OTW ENGINE  
PULK ABSORBER INLET  
FULLY SUPPRESSED ENGINE  
ENGINE WITH APPROACH FLAPS

*SPL* LOSSLESS ARRAY

*FLYOVER PLANE*

DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERIC A  
(FOR POWER AND DIRECTIVITY COMPUTATION)

*ENGINE CENTERLINE MICROPHONES*

ANGLE *90* 60. 90. 120.

COMPUTED CASPL 115.0 115.1 109.1

BAND FREQUENCY

1	50	109.9	110.0	105.0
2	63	106.2	108.5	100.2
3	80	106.7	106.2	98.7
4	100	104.7	104.4	96.9
5	125	104.2	102.7	96.5
6	160	101.2	100.5	94.0
7	200	99.7	98.6	94.9
8	250	97.2	97.9	95.1
9	315	98.1	98.8	94.3
10	400	97.0	98.8	93.3
11	500	94.5	97.8	92.2
12	630	93.7	94.7	90.2
13	800	92.6	93.6	90.2
14	1000	91.4	91.6	89.4
15	1250	91.5	89.7	86.8
16	1600	95.7	91.2	91.4
17	2000	88.8	87.8	83.5
18	2500	91.0	87.0	83.3
19	3150	96.2	89.7	84.7
20	4000	91.4	87.1	79.1
21	5000	93.7	85.8	81.0
22	6300	91.7	86.5	81.1
23	8000	89.6	82.3	75.4
24	10000	86.8	82.4	73.6
25	12500	84.8	85.1	75.0
26	16000	99.9	89.9	79.9
27	20000	96.9	96.9	86.9

58

FOLDOUT FRAME |

76

CONFIGURATION NO 112  
SPEED = 3282. RPM  
PERCENT SPEED = 86.0

O S S L E S S   A R R A Y

T RADIUS WITH NO ATMOSPHERIC ATTENUATION  
(AND DIRECTIVITY COMPUTATIONS)

58

FOLDOUT FRAME

2

DATA CF 606. SUBSET NO. 26. READINGS 74 75 76

SIX DECIBELS HAVE BEEN SUBTRACTED FROM THE ORIGINAL DATA.  
 CCSEE CTW ENGINE  
 BULK ABSORBER INLET  
 FULLY SUPPRESSED ENGINE  
 ENGINE WITH APPROACH FLAPS

ORIGINAL PAGE IS  
 OF POOR QUALITY

5 PL LOSSLESS ARRAY

FLYOVER PLANE DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERIC  
 (FOR POWER AND DIRECTIVITY COMPUTATION)

ANGLE, $\theta$		0.	30.	40.	50.	60.	70.	80.	90.	100.	140.	150.
COMPUTED CASPL		97.9	109.4	109.2	108.2	108.5	109.1	110.4	110.9	111.1	109.8	117.2
BAND FREQUENCY												
1	50	90.3	104.7	104.0	103.0	101.0	100.2	103.2	105.7	106.0	107.2	112.7
2	63	89.5	100.5	101.0	97.3	97.7	101.2	103.3	103.7	103.7	102.8	111.7
3	80	89.8	98.0	96.7	96.5	99.5	101.3	101.7	100.8	102.3	99.2	110.0
4	100	88.8	94.2	97.0	98.7	101.0	98.3	100.5	100.5	99.5	94.3	105.7
5	125	86.9	94.7	98.9	99.2	97.0	98.2	98.4	98.4	99.5	93.0	102.7
6	160	86.7	96.5	97.2	94.9	95.4	96.9	97.2	97.5	97.5	90.9	99.4
7	200	86.4	95.7	93.7	94.4	94.9	95.9	98.2	99.0	98.7	91.9	97.7
8	250	85.2	92.2	93.4	93.7	93.1	94.4	96.4	97.6	96.9	92.1	96.7
9	315	84.2	91.9	92.9	92.6	93.2	95.4	95.7	94.6	94.6	89.7	94.9
10	400	82.8	91.1	90.4	90.4	93.3	93.8	94.6	95.1	94.3	86.1	93.4
11	500	80.6	87.3	88.3	89.0	89.3	91.1	93.6	93.0	92.5	86.5	92.5
12	630	73.7	85.3	86.2	87.2	89.2	90.2	90.3	90.3	89.0	86.7	91.7
13	800	77.2	85.7	86.0	87.0	88.0	90.2	91.9	89.9	89.9	85.9	91.0
14	1000	75.2	86.1	85.7	86.2	87.9	88.6	90.1	87.6	87.7	85.9	89.7
15	1250	73.0	88.5	86.5	86.6	87.5	88.0	88.5	86.1	85.8	84.6	88.8
16	1600	70.2	98.6	94.9	91.9	90.4	92.2	89.9	86.2	85.5	84.9	87.9
17	2000	68.5	87.6	86.6	84.8	86.0	86.3	85.5	83.1	82.5	82.0	85.8
18	2500	66.8	91.1	90.0	87.5	89.0	87.5	85.8	83.5	82.1	81.1	85.1
19	3150	64.7	96.0	94.2	91.3	92.9	92.0	88.3	85.2	83.7	81.5	84.5
20	4000	62.9	89.9	89.2	86.0	88.7	87.0	84.5	82.4	80.5	80.2	83.0
21	5000	61.3	91.8	90.5	87.3	90.8	88.5	86.0	83.8	81.1	79.6	82.8
22	6300	62.2	90.5	89.6	85.6	88.8	87.6	85.1	82.3	80.5	78.8	82.8
23	8000	63.6	86.9	86.4	82.1	86.3	84.5	82.5	79.6	77.3	75.6	79.8
24	10000	65.8	84.6	84.1	80.2	84.7	83.3	80.9	78.3	76.3	75.7	78.6
25	12500	69.1	81.6	80.8	78.8	82.1	80.5	79.5	79.1	79.0	79.1	78.9
26	16000	73.9	84.2	83.7	83.9	83.6	83.8	83.9	83.9	83.9	83.9	83.9
27	20000	80.8	90.7	90.8	90.8	90.8	90.8	90.8	90.8	90.8	90.8	90.8

FROM THE ORIGINAL DATA.

CONFIGURATION NO 112

SPEED = 3282. RPM

PERCENT SPEED = 86.0

LOSSLESS ARRAY

ET RADIUS WITH NO ATMOSPHERIC ATTENUATION  
AND DIRECTIVITY COMPUTATIONS)ORIGINAL PAGE IS  
OF POOR QUALITY

80. 90. 100. 140. 150. 160. 180.

110.4 110.9 111.1 109.8 117.2 120.8 118.8

103.2	105.7	106.0	107.2	112.7	115.5	113.3
103.3	103.7	103.7	102.8	111.7	114.8	110.8
101.7	100.8	102.3	99.2	110.0	113.0	109.2
100.5	100.5	99.5	94.3	105.7	110.0	109.2
98.4	98.4	99.5	93.0	102.7	108.7	108.2
97.2	97.5	97.5	90.9	99.4	106.7	106.7
98.2	99.0	98.7	91.9	97.7	104.9	106.7
96.4	97.6	96.9	92.1	96.7	103.9	104.7
95.7	94.6	94.6	89.7	94.9	100.7	102.9
94.6	95.1	94.3	86.1	93.4	98.9	101.8
93.6	93.0	92.5	86.5	92.5	97.8	99.5
90.3	90.3	89.0	86.7	91.7	95.7	98.0
91.9	89.9	89.9	85.9	91.0	95.5	97.0
90.1	87.6	87.7	85.9	89.7	94.4	95.9
88.5	86.1	85.8	84.6	88.8	93.0	95.1
89.9	86.2	85.5	84.9	87.9	91.5	93.9
85.5	83.1	82.5	82.0	85.8	90.1	92.1
85.8	83.5	82.1	81.1	85.1	89.1	90.6
88.3	85.2	83.7	81.5	84.5	88.2	89.7
84.5	82.4	80.5	80.2	83.0	86.4	88.2
86.0	83.8	81.1	79.6	82.8	85.1	86.6
85.1	82.3	80.5	78.8	82.8	84.2	86.0
82.5	79.6	77.3	75.6	75.8	83.6	83.5
80.9	78.3	76.3	75.7	78.6	85.8	91.9
79.5	79.1	79.0	79.1	78.9	89.1	80.4
80.9	83.9	83.9	83.9	83.9	93.9	84.0
90.8	90.8	90.8	90.8	90.8	100.8	91.2

*SPL* LOSSLESS DATA AT 100 FOOT RADIUS

QCSEE OTW ENGINE

BULK ABSORBER INLET

ORIGINAL PAGE IS  
OF POOR QUALITY

FULLY SUPPRESSED ENGINE

ENGINE WITH APPROACH FLAPS

READING NUMBERS = 80 91 82

CONFIGURATION NC = 112 SPEED = 0. RPM

TEMPERATURE = 63.0 F RELATIVE HUMIDITY = 65.0 PC

*SIDELINE PLANE* BOOM MICROPHONES - LOSSLESS DATA

MIC # 14 15 16 17

R 0. 31. 43. 55.

THETA,  $\theta$  90. 90. 90. 90.

Z 106. 91. 86. 81.

DISTANCE 91. 82. 83. 86.

PHI,  $\phi$  0. 22. 31. 39.

INDEX FREQ

1	50.	67.6	65.9	66.3	62.0
2	63.	61.1	62.3	59.8	63.9
3	80.	65.1	63.5	64.9	62.9
4	100.	62.6	66.8	63.9	61.2
5	125.	59.9	62.1	62.0	60.7
6	160.	60.9	64.8	60.6	59.7
7	200.	58.4	64.3	62.9	61.2
8	250.	57.7	58.0	63.4	63.5
9	315.	59.5	59.0	62.6	63.0
10	400.	58.5	56.6	59.1	57.7
11	500.	58.7	57.6	57.7	55.3
12	630.	58.0	55.3	55.4	53.3
13	800.	56.9	55.5	55.8	54.5
14	1000.	59.0	55.0	55.5	53.8
15	1250.	56.8	54.2	54.7	54.5
16	1600.	55.2	53.4	53.7	53.7
17	2000.	56.1	54.5	54.4	54.1
18	2500.	55.1	54.1	54.2	53.5
19	3150.	55.6	54.2	54.9	55.1
20	4000.	56.2	54.4	55.0	55.2
21	5000.	55.2	53.8	55.3	55.5
22	6300.	56.0	54.1	56.4	57.0
23	8000.	56.5	53.9	57.0	57.4
24	10000.	59.0	53.9	57.9	57.5
25	12500.	55.2	49.4	54.7	54.7
26	16000.	55.1	47.9	55.3	54.2
27	20000.	54.1	46.3	55.5	53.9

OASPL 74.0 74.2 74.2 73.2

FOLDOUT FRAME 1

60

ORIGINAL PAGE IS  
OF POOR QUALITY

BACKGROUND NOISE DATA  
ENGINE NOT OPERATING;  
ENGINE COOLING AIR ON

82

SPEED =	0.0 PPM	PERCENT SPEED	0.0	FGK	0
WE HUMIDITY =	65.0 PC	BAROMETER =	29.25 IN HG	XM11	0

AME 1

60

FOLDOUT FRAME 2

S.S. 27

DATA OF 609. SUBSET NO. 27. READINGS 80 81 82

QCSEE OTW ENGINE  
BULK ABSORBER INLET  
FULLY SUPPRESSED ENGINE  
ENGINE WITH APPROACH FLAPS

ORIGINAL PAGE IS  
OF POOR QUALITY

*SPL* LOSSLESS ARRAY

*FLYOVER PLANE*

DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERIC  
(FOR POWER AND DIRECTIVITY COMPUTATION)

*ENGINE CENTERLINE MICROPHONES*

ANGLE	60.	90.	120.
COMPUTED CASPL	74.5	75.8	77.0

BAND FREQUENCY

1	50	69.4	72.0	70.0
2	63	65.0	66.7	68.0
3	80	66.3	65.8	66.3
4	100	64.5	65.0	65.3
5	125	61.3	59.0	60.0
6	160	60.3	62.4	61.4
7	200	58.6	58.9	57.7
8	250	54.1	57.6	56.7
9	315	57.6	57.1	56.4
10	400	55.4	54.8	53.3
11	500	53.6	53.8	53.1
12	630	54.3	54.8	53.5
13	800	55.0	56.7	55.7
14	1000	55.4	56.1	55.6
15	1250	54.8	54.3	53.9
16	1600	53.5	53.0	53.2
17	2000	53.1	53.3	53.6
18	2500	54.1	53.4	54.4
19	3150	54.3	53.8	53.8
20	4000	54.8	55.5	53.0
21	5000	55.2	52.9	55.2
22	6300	56.9	55.2	57.2
23	8000	56.1	54.3	54.1
24	10000	52.2	54.7	55.0
25	12500	54.2	50.9	54.7
26	16000	51.0	52.8	58.7
27	20000	57.2	61.5	72.2

61

FOLDOUT FRAME 1

91 82

CONFIGURATION NO 112  
SPEED = 0. RPM  
PERCENT SPEED = 0.0

LOSSLESS ARRAY

FT RADIUS WITH NO ATMOSPHERIC ATTENUATION  
POWER AND DIRECTIVITY COMPUTATIONS)

ORIGINAL PAGE IS  
OF POOR QUALITY

61

FOLDOUT FRAME 2



DATA OF 609. SURSET NO. 27. READINGS 80 81 82

SIX DECIBELS HAVE BEEN SUBTRACTED FROM THE ORIGINAL DATA.  
 CCSEE OTW ENGINE  
 PULK ABSORBER INLET  
 FULLY SUPPRESSED ENGINE  
 ENGINE WITH APPROACH FLAPS

*SPL* LOSSLESS ARRAY

*FLYOVER PLANE*

DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERIC  
 (FOR POWER AND DIRECTIVITY COMPUTATION)

ANGLE, $\theta$		0.	30.	40.	50.	60.	70.	80.	90.	100.	140.	150.
COMPUTED CASPL		70.7	76.7	71.9	70.4	69.6	69.2	69.1	69.8	70.0	68.8	68.2
BAND FREQUENCY												
1	50	62.3	62.0	62.2	63.2	62.8	60.5	62.0	62.2	60.2	60.3	59.3
2	63	63.3	66.0	63.0	62.7	61.8	60.7	60.2	60.8	60.8	60.3	59.2
3	80	61.2	68.3	62.8	60.5	60.7	57.2	58.0	56.5	59.8	57.3	60.7
4	100	57.8	70.5	58.5	58.8	56.8	57.2	57.2	58.3	55.3	55.5	55.8
5	125	58.2	68.0	58.0	58.8	57.8	57.0	58.8	59.5	61.5	54.7	55.2
6	160	53.8	67.5	57.8	58.5	55.2	55.0	54.4	55.7	54.0	56.0	51.8
7	200	52.0	64.8	58.5	56.9	54.5	54.0	53.4	54.9	53.8	53.4	51.9
8	250	50.3	61.0	62.1	54.5	51.3	53.6	50.3	57.3	59.3	54.8	51.2
9	315	50.1	62.3	61.6	54.2	51.2	52.6	51.9	53.9	54.1	51.1	51.6
10	400	49.3	58.3	55.8	52.3	50.4	50.8	49.6	49.6	49.8	48.8	48.6
11	500	51.8	53.6	52.1	51.5	51.0	50.0	49.8	51.1	49.9	50.5	48.8
12	630	50.1	52.5	52.0	51.3	50.5	49.3	48.7	49.5	51.3	48.2	49.2
13	800	51.2	52.7	52.0	52.7	53.0	51.0	50.8	50.3	52.5	51.7	50.0
14	1000	51.4	53.2	52.9	52.4	51.4	51.9	52.1	51.4	52.6	49.7	50.4
15	1250	51.6	50.6	50.6	51.1	51.8	50.3	50.6	50.9	52.3	48.9	50.3
16	1600	51.5	49.0	49.3	49.2	50.0	48.8	49.5	49.0	50.8	48.5	49.0
17	2000	50.3	49.4	49.3	49.4	50.6	49.4	50.9	49.9	51.1	49.3	48.6
18	2500	50.6	50.6	50.6	50.6	49.6	50.7	51.4	51.2	51.7	49.2	49.9
19	3150	53.5	54.0	52.6	51.1	50.6	52.5	52.0	52.5	53.1	50.1	51.5
20	4000	55.8	56.0	53.8	52.3	52.0	53.3	53.0	53.1	53.1	51.1	51.6
21	5000	57.2	57.5	55.2	52.7	52.0	53.0	52.5	52.9	53.2	51.0	51.7
22	6300	57.7	57.3	56.0	53.3	52.9	53.5	53.7	54.5	54.4	51.7	52.4
23	8000	57.3	55.8	54.7	51.9	52.3	53.6	54.2	54.8	54.3	52.2	52.0
24	10000	56.5	55.7	53.9	51.5	51.4	52.9	53.5	55.2	53.7	52.4	51.7
25	12500	54.6	54.3	51.8	49.3	48.6	50.0	50.9	51.7	51.4	49.8	48.9
26	16000	53.9	53.1	51.7	50.0	48.8	53.6	51.6	51.3	51.7	50.8	50.2
27	20000	54.5	55.0	54.5	54.2	53.8	55.7	53.9	56.5	56.3	61.1	57.6

FOLDOUT FRAME /

62

ED FROM THE ORIGINAL DATA.

CONFIGURATION NO 112

SPEED = 0. RPM

PERCENT SPEED = 0.0

## LOSSLESS ARRAY

FT RADIUS WITH NO ATMOSPHERIC ATTENUATION  
POWER AND DIRECTIVITY (COMPUTATIONS)

80.	90.	100.	140.	150.	160.	180.
69.1	69.8	70.0	68.8	68.2	69.5	74.8
62.0	62.2	60.2	60.3	59.3	60.7	61.3
60.2	60.8	60.8	60.3	59.2	60.0	60.7
58.0	56.5	59.8	57.3	60.7	59.8	59.3
57.2	58.3	55.3	55.5	55.8	55.3	56.2
58.8	59.5	61.5	54.7	55.2	54.3	55.2
54.4	55.7	54.0	56.0	51.8	60.8	54.0
53.4	54.9	53.8	53.4	51.9	48.8	51.0
50.3	57.3	59.3	54.8	51.2	52.6	52.2
51.9	53.9	54.1	51.1	51.6	49.8	51.2
49.6	49.6	49.8	48.8	48.6	46.8	51.1
49.8	51.1	49.9	50.5	48.8	50.6	51.5
48.7	49.5	51.3	48.2	49.2	50.2	52.0
50.8	50.3	52.5	51.7	50.0	50.3	53.8
52.1	51.4	52.6	49.7	50.4	50.4	54.9
50.6	50.9	52.3	48.9	50.3	50.1	55.8
49.5	49.0	50.8	48.5	49.0	48.5	54.5
50.9	49.9	51.1	49.3	48.6	47.6	55.6
51.4	51.2	51.7	49.2	49.9	49.4	56.4
52.0	52.5	53.1	50.1	51.5	52.6	60.5
53.0	53.1	53.1	51.1	51.6	54.1	63.7
52.5	52.9	53.2	51.0	51.7	54.2	64.7
53.7	54.5	54.4	51.7	52.4	54.4	65.2
54.2	54.8	54.3	52.2	52.0	54.3	63.3
53.5	55.2	53.7	52.4	51.7	53.0	65.5
50.9	51.7	51.4	49.8	48.9	50.8	64.0
51.6	51.3	51.7	50.8	50.2	52.1	64.1
53.9	56.5	56.3	61.1	57.6	60.2	63.7

62

FOLDOUT FRAME

2

# *SPL* LOSSLESS DATA AT 100 FCOT RADIUS

GCSEE OTW ENGINE

BULK ABSORBER INLET

FULLY SUPPRESSED ENGINE

ENGINE WITH APPROACH FLAPS

READING NUMBERS = 83 84 85

CONFIGURATION NG = 112

SPEED = 1715. RPM

TEMPERATURE = 64.0 F

RELATIVE HUMIDITY = 60.0 PC

## *SIDELINE PLANE*

BECM MICROPHONES - LOSSLESS DATA

MIC # 14 15 16 17

R 0. 31. 43. 55.

THETA,  $\theta_s$  90. 90. 90. 90.

Z 106. 91. 86. 81.

DISTANCE 91. 82. 83. 86.

PHI,  $\phi$  0. 22. 31. 39.

INDEX FREQ

1	50.	91.3	84.1	85.0	85.7
2	62.	84.1	81.8	81.3	80.7
3	80.	81.8	80.8	80.0	79.0
4	100.	80.6	79.4	79.5	78.5
5	125.	77.6	77.6	77.7	77.9
6	160.	76.2	76.6	77.4	79.5
7	200.	78.5	80.4	80.4	80.9
8	250.	77.5	78.9	79.2	78.9
9	315.	76.0	78.0	77.6	78.2
10	400.	73.9	75.0	74.7	74.9
11	500.	71.5	72.7	72.7	72.4
12	630.	72.9	71.7	70.8	70.9
13	800.	80.1	78.2	76.8	76.6
14	1000.	74.3	71.7	71.0	71.3
15	1250.	73.1	70.4	69.5	69.7
16	1600.	71.3	69.1	69.0	68.4
17	2000.	67.4	65.6	65.6	65.6
18	2500.	66.0	64.2	64.5	64.7
19	3150.	65.3	62.5	63.1	63.3
20	4000.	66.0	62.2	63.0	62.7
21	5000.	69.7	63.4	64.8	64.7
22	6300.	73.1	67.1	68.7	67.9
23	8000.	71.1	65.6	69.2	67.3
24	10000.	71.1	61.3	65.2	64.7
25	12500.	75.5	60.6	65.9	64.7
26	16000.	67.9	57.8	60.1	59.0
27	20000.	63.2	61.7	61.7	62.7

OASPL 91.1 90.6 90.9 90.9

FOLDOUT FRAME /

85

SPEED = 1715. RPM

PERCENT SPEED 47.0

FGK 4253

VE HUMIDITY = 60.0 PC

BAROMETER = 29.25 IN HG

X1411 .274

63

SS. 28

FOLDOUT FRAME

2

AME /

DATA OF 609. SUBSET NO. 28. READINGS 83 84 85

GCSEE CTW ENGINE  
BULK ABSORBER INLET  
FULLY SUPPRESSED ENGINE  
ENGINE WITH APPROACH FLAPS

SPL LOSSLESS ARRAY

FLYOVER PLANE

DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERIC  
(FOR POWER AND DIRECTIVITY COMPUTATION)

ENGINE CENTERLINE MICROPHONES

ANGLE 60. 90. 120.

COMPUTED CASPL 95.4 92.7 97.7

BAND FREQUENCY

1	50	90.0	87.2	92.5
2	63	85.0	86.5	90.5
3	80	84.4	81.5	87.4
4	100	83.0	80.5	86.3
5	125	80.4	78.7	85.5
6	160	76.5	77.0	81.5
7	200	78.9	78.9	82.4
8	250	78.6	78.9	82.8
9	315	78.1	77.9	78.4
10	400	76.4	76.8	76.8
11	500	73.0	73.5	74.1
12	630	72.5	72.8	72.2
13	800	67.0	79.4	78.9
14	1000	80.2	72.4	73.2
15	1250	75.6	70.0	71.1
16	1600	78.7	69.8	70.0
17	2000	73.3	66.9	68.1
18	2500	74.3	66.1	67.4
19	3150	73.7	64.5	66.7
20	4000	73.5	65.2	66.7
21	5000	74.0	64.6	67.3
22	6300	81.4	68.7	69.2
23	8000	81.8	68.3	69.6
24	10000	75.3	65.1	71.8
25	12500	73.8	64.8	75.0
26	16000	70.7	69.7	79.7
27	20000	76.1	76.4	86.4

64

FOLDOUT FRAME |

CONFIGURATION NC 112  
 SPEED = 1715 RPM  
 PERCENT SPEED = 47.0

LOGS LESS ARRAY

FT RADIUS WITH NO ATMOSPHERIC ATTENUATION  
 POWER AND DIRECTIVITY COMPUTATIONS)

64

FOLDOUT FRAME 2

DATA OF 609. SUPSET NO. 28. READINGS 83 84 85

SIX DECIBELS HAVE BEEN SUBTRACTED FROM THE ORIGINAL DATA.  
 QCSEE CTW ENGINE  
 BULK ABSORBER INLET  
 FULLY SUPPRESSED ENGINE  
 ENGINE WITH APPROACH FLAPS

*SPL* L C S S L E S S A R R A Y

*FLYOVER PLANE* DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERIC A  
 (FOR POWER AND DIRECTIVITY COMPUTATION)

ANGLE <i>θ</i>		0.	30.	40.	50.	60.	70.	80.	90.	100.	140.	150.
COMPUTED CASPL		101.0	96.3	94.1	93.3	91.0	90.2	89.5	89.3	90.0	88.5	91.3
BAND FREQUENCY												
1	50	83.0	86.0	85.0	85.5	83.8	83.0	82.5	83.8	84.2	83.7	85.8
2	63	84.5	81.8	80.8	80.8	80.3	80.8	81.7	81.3	80.0	81.8	86.0
3	80	81.2	79.2	77.7	76.8	80.8	79.5	79.8	78.0	81.0	79.0	81.3
4	100	81.0	78.3	80.2	80.2	79.0	78.7	78.0	77.8	78.3	76.8	78.3
5	125	79.4	77.7	78.7	78.8	75.9	76.9	75.7	75.5	78.0	73.7	77.5
6	160	78.7	79.0	78.5	75.7	75.9	76.9	76.0	76.9	76.9	73.4	75.0
7	200	85.9	79.5	81.7	80.4	78.2	79.9	80.5	78.9	80.4	77.0	79.2
8	250	80.9	77.6	77.7	76.7	76.4	76.7	77.2	77.9	78.6	73.2	78.2
9	315	74.6	75.7	74.9	74.6	73.4	75.2	74.9	74.2	75.9	69.2	72.7
10	400	71.3	72.6	71.3	72.1	73.3	72.4	71.8	71.9	74.4	67.8	71.4
11	500	71.3	72.0	70.0	70.1	70.0	68.8	69.8	70.3	70.5	66.3	69.3
12	630	72.5	73.8	71.0	70.5	69.0	69.8	67.7	68.5	68.8	65.2	67.8
13	800	87.4	87.9	83.2	82.9	81.4	79.0	75.9	74.5	73.7	73.0	74.2
14	1000	82.7	79.9	76.4	75.4	73.4	72.2	69.4	68.9	69.1	68.4	69.7
15	1250	83.3	78.4	75.8	73.4	71.6	70.3	67.9	66.8	68.3	67.8	69.4
16	1600	95.0	84.2	80.0	77.0	75.2	72.2	69.2	67.2	66.9	65.2	66.5
17	2000	82.1	79.4	75.8	73.1	70.6	67.6	65.1	63.8	64.3	61.3	62.9
18	2500	81.7	82.8	77.8	75.1	71.6	68.6	64.7	63.2	63.1	60.7	61.6
19	3150	80.0	80.8	77.1	74.6	70.8	67.6	63.3	61.3	61.5	59.3	60.5
20	4000	81.4	80.2	76.3	75.0	71.4	67.9	63.2	61.5	61.0	59.4	60.4
21	5000	80.6	80.0	76.6	76.7	72.1	68.3	63.8	62.3	61.8	61.5	61.5
22	6300	98.8	88.7	81.8	84.4	75.2	73.8	67.6	63.5	63.3	63.4	65.0
23	8000	91.4	87.1	87.5	84.3	79.5	76.8	71.5	63.1	61.4	61.4	62.1
24	10000	79.4	80.4	80.9	81.0	75.3	71.0	65.3	61.3	59.7	59.2	60.6
25	12500	78.1	75.8	73.6	73.4	68.1	67.0	62.3	60.0	59.9	61.5	62.6
26	16000	79.4	78.5	75.5	73.5	68.6	65.6	63.4	63.6	63.6	63.5	63.4
27	20000	73.3	73.7	73.0	72.7	70.0	69.9	70.4	70.4	70.4	70.4	70.4

65

FOLDOUT FRAME /

FROM THE ORIGINAL DATA.

CONFIGURATION NO 112  
 SPEED = 1715. RPM  
 PERCENT SPEED = 47.0

C S S L E S S A R R A Y

T RADIUS WITH NO ATMOSPHERIC ATTENUATION  
 AND DIRECTIVITY COMPUTATIONS

ORIGINAL PAGE IS  
 OF POOR QUALITY

80.	90.	100.	140.	150.	160.	180.
89.5	89.3	90.0	88.5	91.3	91.4	94.1

82.5	83.8	84.2	83.7	85.8	85.3	86.5
81.7	81.3	80.0	81.8	86.0	84.8	89.5
79.8	78.0	81.0	79.0	81.3	83.2	85.5
78.0	77.8	78.3	76.8	78.3	81.0	84.2
75.7	75.5	78.0	73.7	77.5	79.0	81.0
76.0	76.9	76.9	73.4	75.0	76.9	79.2
80.5	78.9	80.4	77.0	79.2	78.5	79.7
77.2	77.9	78.6	73.2	78.2	77.2	79.2
74.9	74.2	75.9	69.2	72.7	74.6	76.4
71.8	71.9	74.4	67.8	71.4	72.9	74.9
69.8	70.3	70.5	66.3	69.3	70.3	72.5
67.7	68.5	68.8	65.2	67.8	69.3	71.0
75.9	74.5	73.7	73.0	74.2	74.7	75.0
69.4	68.9	69.1	68.4	69.7	69.7	71.7
67.9	66.8	68.3	67.8	69.4	69.1	69.3
69.2	67.2	66.8	65.2	66.5	66.7	67.3
65.1	63.8	64.3	61.3	62.9	64.1	65.9
64.7	63.2	63.1	60.7	61.6	63.1	64.7
63.3	61.3	61.5	59.3	60.5	62.0	63.5
63.2	61.5	61.0	59.4	60.4	61.2	63.4
63.8	62.3	61.8	61.5	61.5	61.8	65.1
67.6	63.5	63.3	63.4	65.0	64.3	68.5
71.5	63.1	61.4	61.4	62.1	62.4	66.6
65.3	61.3	59.7	59.2	60.6	60.4	66.7
62.3	60.0	59.9	61.5	62.6	62.9	71.2
63.4	63.6	63.6	63.5	63.4	63.4	68.2
70.4	70.4	70.4	70.4	70.4	70.4	69.4



# *SPL* LOSSLESS DATA AT 100 FOOT RADIUS

QCSEE OTW ENGINE

BULK ABSORBER INLET

FULLY SUPPRESSED ENGINE

ENGINE WITH APPROACH FLAPS

READING NUMBERS = 86 87 88

CONFIGURATION NC = 112

SPEED = 3272. RPM

TEMPERATURE = 64.0 F

RELATIVE HUMIDITY = 56.0 PC

## *SHOELINE PLANE*

BOOM MICROPHONES - LOSSLESS DATA

MIC # 14 15 16 17

R 0. 31. 43. 55.

THETA,  $\theta_s$  90. 90. 90. 90.

Z 106. 91. 86. 81.

DISTANCE 91. 82. 33. 86.

PHI,  $\phi$  0. 22. 31. 39.

INDEX FREQ

1	50.	103.1	98.6	96.5	99.5
2	63.	98.0	97.8	95.7	97.4
3	80.	97.5	98.3	95.2	97.4
4	100.	97.8	96.3	94.4	96.9
5	125.	97.3	97.1	95.7	96.9
6	160.	94.8	94.1	95.7	96.7
7	200.	94.9	95.4	95.5	97.4
8	250.	94.0	95.1	95.5	96.2
9	315.	93.9	96.1	95.9	97.4
10	400.	93.0	95.3	95.9	96.4
11	500.	91.9	93.8	94.1	94.4
12	630.	89.7	91.3	91.3	92.8
13	800.	89.6	90.5	90.3	91.3
14	1000.	88.1	89.2	89.0	90.1
15	1250.	87.6	88.4	87.8	89.2
16	1600.	98.8	88.6	88.4	88.0
17	2000.	84.4	84.7	84.1	85.9
18	2500.	84.2	83.9	83.5	85.4
19	3150.	87.0	85.9	86.1	87.3
20	4000.	85.1	82.8	82.7	84.2
21	5000.	85.3	82.9	83.4	84.4
22	6300.	85.2	81.3	82.4	84.0
23	8000.	83.2	78.2	80.5	81.9
24	10000.	83.0	76.1	79.4	80.5
25	12500.	82.0	75.7	76.2	77.5
26	16000.	80.6	78.4	78.6	75.3
27	20000.	84.3	82.2	82.4	72.7

FOLDOUT FRAME /

CASPL 108.1 107.4 106.6 108.1

S

88

SPEED = 3272. RPM

PERCENT SPEED 86.0

FGK 15369

VE HUMIDITY = 56.0 PC

BAROMETER = 29.26 IN HG

XM11 .607

T FRAME /

66

FOLDOUT FRAME 2

S.S. 29

DATA OF 609. SUBSET NO. 29. READINGS 86 87 88

GCSEE GTW ENGINE  
BULK ABSORBER INLET  
FULLY SUPPRESSED ENGINE  
ENGINE WITH APPROACH FLAPS

*SPL* LOSSLESS ARRAY

*FLYOVER PLANE*

DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERIC  
(FOR POWER AND DIRECTIVITY COMPUTATION)

*ENGINE CENTERLINE MICROPHONES*

ANGLE,  $\theta$  60. 90. 120.

COMPUTED CASPL 111.2 114.1 110.1

BAND FREQUENCY

1	50	105.0	108.9	105.5
2	63	101.0	106.0	102.9
3	80	103.9	105.9	100.7
4	100	102.7	104.0	97.9
5	125	98.7	102.5	95.7
6	160	95.2	99.2	94.0
7	200	93.9	97.6	94.2
8	250	93.9	97.6	93.9
9	315	94.9	98.3	93.3
10	400	95.0	98.8	92.5
11	500	93.5	97.3	91.5
12	630	91.2	94.2	89.8
13	800	91.2	93.0	89.2
14	1000	90.9	91.7	87.9
15	1250	90.8	89.8	86.8
16	1600	95.5	90.4	90.4
17	2000	88.8	87.1	83.3
18	2500	90.8	86.5	83.1
19	3150	95.2	89.5	84.9
20	4000	90.7	87.1	80.7
21	5000	92.4	86.7	80.9
22	6300	92.3	86.1	81.6
23	8000	90.0	83.0	79.8
24	10000	85.0	82.7	82.1
25	12500	86.8	85.5	85.5
26	16000	82.9	90.5	90.5
27	20000	86.7	97.3	97.3

67

FOLDOUT FRAME /

88

CONFIGURATION NO 112  
SPEED = 3272. RPM  
PERCENT SPEED = 86.0

O S S L E S S   A R R A Y

RADIUS WITH NO ATMOSPHERIC ATTENUATION  
(AND DIRECTIVITY COMPUTATIONS)

67

FOLDOUT FRAME 2

DATA OF 609. SUBSET NO. 29. READINGS 86 87 88

SIX DECIBELS HAVE BEEN SUBTRACTED FROM THE ORIGINAL DATA.  
 QCSEE CTW ENGINE  
 BULK ABSORBER INLET  
 FULLY SUPPRESSED ENGINE  
 ENGINE WITH APPROACH FLAPS

ORIGINAL PAGE IS  
 OF POOR QUALITY

SPL LOSSLESS ARRAY

*Flyover Plane* DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERIC A  
 (FOR POWER AND DIRECTIVITY COMPUTATION)

ANGLE,  $\theta$  0. 30. 40. 50. 60. 70. 80. 90. 100. 140. 150.

COMPUTED CASPL 108.2 108.7 108.4 107.9 107.7 107.7 109.1 109.7 110.2 107.3 114.8 1

BAND FREQUENCY

1	50	100.0	101.7	101.5	101.5	99.2	97.3	101.8	103.3	104.5	105.2	111.2	1
2	63	99.2	100.8	99.3	97.7	95.5	98.7	101.8	101.5	103.0	100.0	109.2	1
3	80	99.5	97.0	94.8	96.3	99.5	99.8	99.7	100.2	100.2	95.0	106.3	1
4	100	95.3	93.7	95.7	98.2	99.3	97.2	98.5	99.2	98.7	90.5	102.3	1
5	125	94.5	94.7	98.2	98.7	96.2	96.7	96.7	98.4	99.4	90.5	99.2	1
6	160	94.2	97.0	96.2	93.5	95.4	95.5	96.2	96.5	97.5	88.2	95.9	1
7	200	91.7	95.7	92.9	93.9	94.4	95.9	97.4	98.0	98.4	87.7	94.7	1
8	250	90.1	91.4	92.7	93.1	93.1	94.2	94.9	97.4	96.1	85.7	93.4	1
9	315	89.7	92.1	92.6	91.9	92.1	94.1	94.7	94.7	94.2	84.4	91.2	
10	400	86.8	91.3	89.6	90.4	92.8	92.4	94.3	94.3	94.6	83.4	90.1	
11	500	86.0	88.3	88.1	88.8	90.5	90.5	93.1	93.3	91.8	83.0	88.1	
12	630	84.5	85.8	86.0	86.8	87.0	90.2	90.1	89.8	89.3	80.5	86.8	
13	800	84.8	86.2	85.7	87.2	89.5	89.3	91.0	89.7	89.7	81.2	87.2	
14	1000	86.1	86.6	85.7	86.7	97.5	88.7	88.9	87.9	87.9	81.7	86.6	
15	1250	89.6	88.8	87.3	86.9	87.6	88.3	87.3	86.4	85.4	80.4	86.1	
16	1600	96.5	96.5	95.0	94.2	93.5	91.0	87.7	87.8	85.7	80.7	85.8	
17	2000	89.8	88.4	87.4	85.6	86.6	85.4	84.8	83.4	82.3	77.4	83.3	
18	2500	93.6	92.3	90.8	88.3	87.6	86.8	85.6	83.6	81.6	76.9	82.4	
19	3150	98.0	97.2	98.6	94.0	92.4	91.5	89.4	86.9	83.5	78.2	81.7	
20	4000	93.2	92.4	90.9	88.9	88.1	87.1	85.4	83.4	80.2	75.7	80.7	
21	5000	94.4	93.4	92.7	90.5	89.0	88.2	87.2	85.0	80.4	74.5	79.3	
22	6300	92.4	91.7	92.3	89.6	88.1	86.8	86.4	84.3	79.1	73.5	78.9	
23	8000	89.5	89.0	90.0	86.7	85.8	84.0	84.0	81.7	76.2	73.8	76.4	
24	10000	88.5	87.8	89.2	85.0	84.3	83.0	83.2	80.9	76.0	76.1	77.0	
25	12500	86.0	85.5	86.6	82.5	81.7	80.6	81.1	79.4	79.5	79.5	79.5	
26	16000	85.1	85.1	86.2	84.2	84.2	84.3	84.3	84.4	84.4	84.4	84.4	
27	20000	91.1	91.1	90.9	91.3	91.3	91.3	91.3	91.3	91.3	91.3	91.3	

68

FOLDOUT FRAME /

FROM THE ORIGINAL DATA.

CONFIGURATION NO 112

SPEED = 3272. RPM

PERCENT SPEED = 86.0

O S S L E S S   A R R A Y

RADIUS WITH NO ATMOSPHERIC ATTENUATION  
AND DIRECTIVITY COMPUTATIONS)ORIGINAL PAGE IS  
OF POOR QUALITY

80. 90. 100. 140. 150. 160. 180.

29.1 109.7 110.2 107.3 114.8 118.0 116.9

11.8 103.3 104.5 105.2 111.2 112.2 111.2

11.8 101.5 103.0 100.0 109.2 112.0 108.7

99.7 100.2 100.2 95.0 106.3 110.5 108.7

98.5 99.2 98.7 90.5 102.3 107.5 106.7

96.7 98.4 99.4 90.5 99.2 106.9 105.9

96.2 96.5 97.5 88.2 95.9 104.0 104.9

97.4 98.0 98.4 87.7 94.7 103.2 104.5

94.9 97.4 96.1 85.7 93.4 101.6 103.1

94.7 94.7 94.2 84.4 91.2 98.4 101.4

94.3 94.3 94.6 83.4 90.1 97.4 99.9

93.1 93.3 91.8 83.0 88.1 96.1 98.3

90.1 89.8 89.3 80.5 86.8 93.8 95.8

91.0 89.7 89.7 81.2 87.2 93.8 95.8

88.9 87.9 87.9 81.7 86.6 92.5 94.9

87.3 86.4 85.4 80.4 86.1 91.8 93.3

87.7 87.8 85.7 80.7 85.8 90.3 92.5

84.8 83.4 82.3 77.4 83.3 88.6 90.6

85.6 83.6 81.6 76.9 82.4 87.6 89.4

89.4 86.9 83.5 78.2 81.7 86.7 87.5

85.4 83.4 80.2 75.7 80.7 84.7 86.4

87.2 85.0 80.4 74.5 79.3 83.5 85.2

86.4 84.3 79.1 73.5 78.9 82.6 84.3

84.0 81.7 76.2 73.8 76.4 80.0 81.9

83.2 80.9 76.0 76.1 77.0 79.2 81.5

81.1 79.4 79.5 79.5 79.5 79.3 80.2

84.3 84.4 84.4 84.4 84.4 84.4 84.4

81.3 91.3 91.3 91.3 91.3 91.3 91.3

*SPL*

LOSSLESS DATA AT 100 ECCT RADIUS

QCSEE CTW ENGINE

BULK ABSORPER INLET

ORIGINAL PAGE IS  
OF POOR QUALITY

FULLY SUPPRESSED ENGINE

ENGINE WITH APPROACH FLAPS

READING NUMBERS = 89 90 91

CONFIGURATION NC = 112

SPEED = 3424. RPM

TEMPERATURE = 65.0 F

RELATIVE HUMIDITY = 54.0 PC

*SIDELINE PLANE*

BOOM MICROPHONES - LOSSLESS DATA

MIC # 14 15 16 17

R 0. 31. 43. 55.

THETA,  $\theta_s$  90. 90. 90. 90.

Z 106. 91. 86. 81.

DISTANCE 91. 82. 83. 86.

PHI,  $\phi$  0. 22. 31. 39.

INDEX FREQ

1	50.	95.8	98.9	99.2	102.4
2	63.	97.8	98.1	97.5	99.5
3	80.	97.8	97.6	96.9	100.9
4	100.	97.8	96.9	97.2	99.5
5	125.	97.3	97.6	98.2	98.9
6	160.	95.5	96.1	97.2	99.7
7	200.	96.2	96.8	98.2	99.4
8	250.	95.3	96.2	97.4	99.2
9	315.	94.7	97.0	97.7	99.4
10	400.	94.2	95.8	98.1	98.4
11	500.	93.4	95.0	96.4	97.6
12	630.	91.4	92.8	94.3	95.1
13	800.	91.3	91.9	92.8	94.6
14	1000.	89.9	90.7	91.5	93.0
15	1250.	89.3	90.2	91.2	91.8
16	1600.	92.5	91.1	92.7	93.2
17	2000.	86.9	86.7	87.4	88.8
18	2500.	85.8	85.3	86.2	87.4
19	3150.	88.7	87.4	87.8	88.5
20	4000.	86.2	83.9	85.0	86.1
21	5000.	86.4	83.1	84.9	85.6
22	6300.	86.5	81.9	84.4	85.3
23	8000.	84.2	78.2	81.5	82.5
24	10000.	83.9	75.8	80.2	81.2
25	12500.	83.0	75.7	76.9	78.3
26	16000.	81.7	78.5	78.6	79.3
27	20000.	84.3	82.3	82.5	83.4

CASPL

107.5 108.1 108.9 110.7

FOLDOUT FRAME 1

69

ORIGINAL PAGE IS  
OF POOR QUALITY

91

SPEED = 3424. RPM

PERCENT SPEED 90.0

FGK 17343

VE HUMIDITY = 54.0 PC

BAROMETER = 29.27 IN HG

XMH .671

FOLDOUT FRAME 2 SS. 30

FRAME 1

69



DATA OF 609. SUBSET NO. 30. READINGS 89 90 91

CCSEE CTW ENGINE  
BULK ABSORBER INLET  
FULLY SUPPRESSED ENGINE  
ENGINE WITH APPROACH FLAPS

ORIGINAL PAGE IS  
OF POOR QUALITY

SPL LOSSLESS ARRAY

FLYOVER PLANE

DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERIC  
(FOR POWER AND DIRECTIVITY COMPUTATION)

ENGINE CENTERLINE MICROPHONES

ANGLE,  $\theta$  60. 90. 120.

COMPUTED CASPL 113.3 116.0 118.6

BAND FREQUENCY

1	50	107.0	111.0	111.9
2	63	104.9	109.5	110.4
3	80	105.2	107.5	109.3
4	100	103.9	104.9	107.8
5	125	101.0	102.4	107.5
6	160	96.9	101.2	107.7
7	200	96.1	98.1	107.1
8	250	96.4	98.2	103.6
9	315	97.1	99.6	102.8
10	400	97.1	99.8	101.4
11	500	95.6	98.6	97.9
12	630	93.7	95.8	95.9
13	800	93.9	94.7	93.5
14	1000	93.4	92.7	90.2
15	1250	93.1	90.8	88.5
16	1600	90.4	93.2	88.9
17	2000	91.5	89.5	86.0
18	2500	91.5	87.6	87.8
19	3150	95.0	89.7	87.2
20	4000	90.6	87.8	86.8
21	5000	91.1	85.9	87.6
22	6300	90.5	86.3	86.4
23	8000	88.0	82.9	99.9
24	10000	83.4	82.4	92.2
25	12500	86.1	85.6	95.6
26	16000	90.6	90.6	100.6
27	20000	97.5	97.5	107.5

70

FOLDOUT FRAME |

91

CONFIGURATION NO 112  
SPEED = 3424. RPM  
PERCENT SPEED = 90.0

C S S L E S S   A R R A Y

T R A D I U S   W I T H   N O   A T M O S P H E R I C   A T T E N U A T I O N  
( R A D I U S   A N D   D I R E C T I V I T Y   C O M P U T A T I O N S )

ORIGINAL PAGE IS  
OF POOR QUALITY

70

FOLDOUT FRAME 2

DATA OF 609. SUBSET NO. 30. READINGS 89 90 91

SIX DECIBELS HAVE BEEN SUBTRACTED FROM THE ORIGINAL DATA.

CCSEE OTW ENGINE

BULK ABSORBER INLET

FULLY SUPPRESSED ENGINE

ENGINE WITH APPROACH FLAPS

ORIGINAL PAGE IS  
OF POOR QUALITY

SPL LOSSLESS ARRAY

FLYOVER PLANE

DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERIC  
(FOR POWER AND DIRECTIVITY COMPUTATION)

ANGLE,  $\theta$  0. 30. 40. 50. 60. 70. 80. 90. 100. 140. 150.

COMPUTED CASPL 109.2 109.6 109.3 109.2 109.3 109.7 110.7 111.5 112.9 106.6 116.6

BAND FREQUENCY

1	50	101.7	103.2	103.5	103.7	101.5	100.7	102.8	105.7	107.5	102.8	113.3
2	63	101.3	102.2	100.7	98.3	99.0	102.0	103.3	103.2	105.2	100.3	111.9
3	80	100.2	99.3	96.8	96.8	100.5	101.8	101.3	102.3	104.7	97.0	107.8
4	100	97.8	94.3	97.3	99.0	101.7	99.3	99.7	101.5	101.7	93.3	104.7
5	125	96.7	95.9	99.4	99.2	99.0	98.0	99.9	99.5	101.2	92.4	100.7
6	160	95.0	98.0	97.7	94.4	96.7	97.9	98.4	98.7	99.4	89.9	97.0
7	200	94.0	96.9	93.5	95.4	96.0	96.7	99.2	99.7	100.5	88.4	95.0
8	250	92.6	93.2	94.4	94.7	94.7	95.4	97.2	98.4	98.2	87.9	94.9
9	315	92.4	93.6	94.2	93.7	93.1	95.9	96.6	96.6	96.4	87.2	92.7
10	400	89.1	92.6	91.6	92.4	93.9	94.4	95.4	95.9	96.1	85.6	92.1
11	500	87.6	90.3	90.5	91.3	91.6	93.3	94.5	95.0	94.3	84.6	89.6
12	630	86.0	88.0	88.7	90.0	88.8	92.0	92.5	91.7	92.2	82.5	90.2
13	800	85.5	88.0	97.7	89.0	91.2	91.3	93.2	91.8	92.0	83.2	90.2
14	1000	86.7	87.9	87.7	89.1	88.6	90.6	91.4	89.9	90.7	83.7	87.6
15	1250	92.1	89.6	88.9	88.9	88.1	89.8	89.9	88.8	88.8	82.9	89.0
16	1600	98.8	97.0	96.0	97.8	94.3	92.7	91.0	88.8	88.8	83.0	87.6
17	2000	90.3	88.9	88.4	88.6	86.9	87.4	86.4	85.4	85.9	79.4	85.9
18	2500	91.5	90.5	89.3	88.8	86.6	87.4	86.1	84.8	84.6	78.3	85.4
19	3150	95.7	95.2	93.7	93.0	89.9	89.7	87.9	86.0	85.5	78.4	84.1
20	4000	91.1	90.9	89.2	88.7	86.4	86.2	84.9	83.4	82.9	76.4	83.2
21	5000	91.9	92.4	90.6	89.9	86.9	86.4	85.0	83.4	82.2	74.9	82.1
22	6300	90.4	91.1	89.4	88.6	85.3	85.1	84.1	82.5	81.3	73.3	82.0
23	8000	87.7	88.2	86.2	85.9	82.2	82.7	81.0	79.4	78.0	73.9	79.0
24	10000	86.4	86.9	85.1	84.4	80.4	81.2	79.8	78.0	77.2	76.2	78.2
25	12500	84.1	84.4	82.3	81.7	79.9	79.5	79.4	79.5	79.6	79.6	79.5
26	16000	84.7	84.3	84.3	84.4	84.5	84.6	84.6	84.6	84.6	84.6	84.6
27	20000	91.4	91.5	91.5	91.5	91.5	91.5	91.5	91.5	91.5	91.5	91.5

71

FOLDOUT FRAME /

FROM THE ORIGINAL DATA.

CONFIGURATION NO 112

SPEED = 3424. RPM

PERCENT SPEED = 90.0

O S S L E S S A R R A Y

ORIGINAL PAGE IS  
OF POOR QUALITYRADIUS WITH NO ATMOSPHERIC ATTENUATION  
AND DIRECTIVITY COMPUTATIONS)

80. 90. 100. 140. 150. 160. 180.

10.7 111.5 112.9 106.6 116.8 121.0 116.6

102.8	105.7	107.5	102.8	113.3	115.2	112.3
103.3	103.2	105.2	100.3	111.5	115.5	112.3
101.3	102.3	104.7	97.0	107.8	112.5	107.5
99.7	101.5	101.7	93.3	104.7	110.7	103.0
99.9	99.5	101.2	92.4	100.7	109.4	100.3
98.4	98.7	99.4	89.9	97.0	107.4	97.7
99.2	99.7	100.5	88.4	95.0	106.2	94.9
97.2	98.4	98.2	87.9	94.9	104.4	95.6
96.6	96.6	96.4	87.2	92.7	102.2	94.1
95.4	95.9	96.1	85.6	92.1	100.6	92.1
94.5	95.0	94.3	84.6	89.6	99.3	89.4
92.5	91.7	92.2	82.5	90.2	97.0	87.4
93.2	91.8	92.0	83.2	90.2	96.7	84.3
91.4	89.9	90.7	83.7	87.6	95.4	83.7
89.9	88.8	88.8	82.9	89.0	93.8	80.8
81.0	88.8	88.8	83.0	87.6	92.3	80.8
86.4	85.4	85.9	79.4	85.9	91.3	79.9
86.1	84.8	84.6	78.3	85.4	89.9	81.4
87.9	86.0	85.5	78.4	84.1	88.7	81.4
84.9	83.4	82.9	76.4	83.2	87.2	81.1
85.0	83.4	82.2	74.9	82.1	85.9	81.4
84.1	82.5	81.3	73.3	82.0	85.0	82.4
81.0	79.4	78.0	73.9	79.0	83.8	83.9
79.8	78.0	77.2	76.2	78.2	86.2	86.2
79.4	79.5	79.6	79.6	79.5	89.6	89.6
84.6	84.6	84.6	84.6	84.6	94.6	94.6
91.5	91.5	91.5	91.5	91.5	101.5	101.5

# *SPL* LOSSLESS DATA AT 100 ECCT RADIUS

QCSEE OTW ENGINE

BULK ABSORBER INLET

FULLY SUPPRESSED ENGINE

ENGINE WITH APPROACH FLAPS

READING NUMBERS = 92 93 94

CCNF IGURATION NC = 112

SPEED = 3621. RPM

TEMPERATURE = 66.0 F

RELATIVE HUMIDITY = 52.0 PC

## *SIDELINE PLANE* BCOM MICROPHONES - LOSSLESS DATA

MIC # 14 15 16 17

R 0. 31. 43. 55.

THETA,  $\theta_s$  90. 90. 90. 90.

Z 106. 91. 86. 81.

DISTANCE 91. 82. 83. 86.

PHI,  $\phi$  0. 22. 31. 39.

INDEX FREQ

1	50.	99.8	100.3	101.5	102.5
2	63.	99.8	99.8	100.0	100.5
3	80.	99.5	99.9	99.0	102.0
4	100.	99.0	97.3	99.2	101.5
5	125.	99.3	99.1	100.7	102.5
6	160.	97.3	98.1	100.0	101.7
7	200.	98.8	98.3	100.2	101.7
8	250.	97.0	97.6	99.4	100.7
9	315.	96.0	98.5	100.1	101.4
10	400.	96.0	97.6	99.2	100.4
11	500.	95.2	97.2	97.9	99.4
12	630.	93.6	95.0	96.1	97.6
13	800.	93.1	94.5	95.6	96.8
14	1000.	91.9	93.5	94.3	95.5
15	1250.	91.1	92.1	93.3	94.2
16	1600.	90.8	90.4	91.7	92.6
17	2000.	88.9	88.7	90.3	90.9
18	2500.	86.8	86.8	88.3	89.5
19	3150.	87.5	85.7	87.3	88.4
20	4000.	87.1	84.1	86.7	87.1
21	5000.	97.1	82.4	85.4	85.9
22	6300.	87.0	81.5	85.1	85.8
23	8000.	85.4	78.2	82.6	83.5
24	10000.	85.1	75.3	81.1	81.8
25	12500.	84.1	75.8	77.8	78.7
26	16000.	83.2	78.6	78.7	79.4
27	20000.	84.2	82.4	82.7	83.5

OASPL

109.3 109.7 110.9 112.4

FOLDOUT FRAME /

72

ED = 3621. RPM

PERCENT SPEED 95.0

FGK 19795

UMIDITY = 52.0 PC

BAROMETER = 29.27 IN HG

Xm .768

SS. 31

72

FOLDOUT FRAME

2

DATA OF 609. SUBSET NO. 31. READINGS 92 93 94

QCSEE CTW ENGINE  
BULK ABSORBER INLET  
FULLY SUPPRESSED ENGINE  
ENGINE WITH APPROACH FLAPS

*SPL* LOSSLESS ARRAY

*FLYOVER PLANE* DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERIC A  
(FOR POWER AND DIRECTIVITY COMPUTATION)

*ENGINE CENTERLINE MICROPHONES*

ANGLE,  $\theta$  60. 90. 120.

COMPUTED CASPL 115.0 117.3 127.1

BAND FREQUENCY

1	50	107.9	111.0	120.7
2	63	106.4	110.2	117.7
3	80	107.5	110.2	117.5
4	100	107.0	107.5	116.5
5	125	103.9	105.0	114.7
6	160	100.5	103.0	114.7
7	200	98.6	101.2	114.7
8	250	97.7	100.9	114.2
9	315	99.1	101.8	114.4
10	400	100.0	101.6	113.5
11	500	98.8	100.8	112.8
12	630	96.8	98.0	111.8
13	800	96.7	97.2	110.2
14	1000	95.7	95.7	109.1
15	1250	94.6	93.5	106.3
16	1600	94.7	92.2	100.7
17	2000	92.1	91.3	98.0
18	2500	90.3	89.3	95.0
19	3150	89.1	87.9	91.9
20	4000	87.6	88.5	89.3
21	5000	85.9	85.6	88.3
22	6300	86.0	85.5	88.4
23	8000	83.5	82.8	90.0
24	10000	82.1	82.2	92.3
25	12500	85.8	85.8	95.8
26	16000	90.8	90.8	100.8
27	20000	97.8	97.8	107.8

73

FOLDOUT FRAME /

94

CONFIGURATION NC 112  
SPEED = 3621. RPM  
PERCENT SPEED = 95.0

O S S L E S S A R R A Y

RADIUS WITH NO ATMOSPHERIC ATTENUATION  
(AND DIRECTIVITY COMPUTATIONS)

73

FOLDOUT FRAME

2



DATA OF 609. SUBSET NO. 31. READINGS 92 93 94

SIX DECIBELS HAVE BEEN SUBTRACTED FROM THE ORIGINAL DATA.  
QCSEE OTW ENGINE  
PULK ABSORBER INLET  
FULLY SUPPRESSED ENGINE  
ENGINE WITH APPROACH FLAPS

SPL LCSSLESS ARRAY

*FLYOVER Plane* DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERIC A  
(FOR POWER AND DIRECTIVITY COMPUTATION)

ANGLE *0.* 30. 40. 50. 60. 70. 80. 90. 100. 140. 150.

COMPUTED CASPL 109.7 110.6 110.4 110.7 111.0 112.0 113.2 114.0 114.4 109.5 117.1 1

BAND FREQUENCY

1	50	103.2	105.3	104.8	104.8	102.2	102.7	104.5	107.3	109.3	106.7	112.5	1
2	63	103.3	103.2	103.0	101.5	101.8	104.3	106.7	108.2	107.3	102.3	112.7	1
3	80	102.3	101.5	99.2	98.8	103.7	103.8	105.2	104.8	105.8	99.2	109.7	1
4	100	97.5	97.0	99.2	102.2	103.0	102.0	102.0	103.2	102.8	95.8	103.7	1
5	125	98.4	97.7	101.2	101.7	100.2	102.0	102.4	102.4	102.2	94.2	100.9	1
6	160	95.9	100.0	98.7	97.0	99.4	99.7	100.9	100.4	99.9	92.4	98.2	1
7	200	95.4	98.7	95.4	97.2	98.2	100.0	101.5	101.4	101.7	91.9	96.7	1
8	250	93.6	95.1	94.9	96.9	96.9	97.7	100.1	100.2	98.7	90.2	93.8	1
9	315	93.2	95.4	95.9	96.1	95.2	98.1	98.7	97.7	97.9	89.7	93.4	1
10	400	90.8	94.9	93.8	94.4	95.9	97.4	97.3	97.3	97.3	87.3	92.1	1
11	500	90.3	92.0	92.0	92.0	94.6	95.6	96.5	96.5	95.5	86.1	89.8	1
12	630	88.2	89.7	91.3	91.5	91.7	94.8	94.2	93.5	93.5	84.0	86.7	
13	800	86.5	89.2	90.0	91.7	93.5	94.2	94.5	93.5	94.2	85.2	89.0	
14	1000	85.4	88.2	88.9	90.2	91.2	93.2	92.7	92.1	92.7	85.1	89.1	
15	1250	86.1	86.8	89.1	88.3	90.1	91.9	91.4	90.6	90.8	83.3	88.6	
16	1600	90.7	89.3	89.5	89.7	89.3	92.8	90.5	89.0	89.3	82.2	86.7	
17	2000	86.8	86.1	87.1	86.9	87.3	89.9	88.3	87.6	87.4	80.1	85.4	
18	2500	82.9	83.4	84.4	84.9	85.9	87.8	86.4	86.4	85.8	80.4	84.1	
19	3150	85.0	84.5	84.9	84.5	85.7	86.7	85.4	85.2	84.5	78.9	83.2	
20	4000	83.1	83.3	83.1	83.3	84.1	85.1	83.9	83.9	83.1	77.3	82.3	
21	5000	81.7	82.1	82.0	81.9	82.4	83.7	82.5	82.7	81.6	76.9	80.7	
22	6300	80.0	81.1	80.6	80.8	81.1	82.8	81.5	81.7	80.8	75.8	80.2	
23	8000	75.0	77.6	77.9	77.8	78.1	79.9	78.6	79.3	78.1	73.9	77.4	
24	10000	77.9	77.3	76.6	77.3	76.4	78.5	77.3	77.9	76.4	76.3	77.1	
25	12500	79.6	79.7	79.7	79.7	79.7	79.6	79.7	79.6	79.7	79.7	79.7	
26	16000	84.7	84.7	84.7	84.7	84.7	84.7	84.7	84.7	84.7	84.7	84.7	
27	20000	91.7	91.7	91.7	91.7	91.7	91.7	91.7	91.7	91.7	91.7	91.7	1

FOLDOUT FRAME 1

FROM THE ORIGINAL DATA.

CONFIGURATION NO 112

SPEED = 3621. RPM

PERCENT SPEED = 95.0

C S S L E S S A R R A Y

T RADIUS WITH NO ATMOSPHERIC ATTENUATION  
AND DIRECTIVITY (COMPUTATIONS)

80. 90. 100. 140. 150. 160. 180.

113.2 114.0 114.4 109.5 117.1 123.7 116.0

C4.5 107.3 109.3 106.7 112.5 117.3 112.2

C6.7 108.2 107.3 102.3 112.7 118.0 110.7

C5.2 104.8 105.8 99.2 109.7 116.7 107.2

C2.0 103.2 102.8 95.8 103.7 113.8 102.8

C2.4 102.4 102.2 94.2 100.9 111.5 96.3

C0.9 100.4 99.9 92.4 98.2 109.2 96.4

C1.5 101.4 101.7 91.9 96.7 108.0 93.3

C0.1 100.2 98.7 90.2 93.8 106.2 93.6

C8.7 97.7 97.9 89.7 93.4 103.7 95.8

C7.3 97.3 97.3 87.3 92.1 101.9 90.6

C6.5 96.5 95.5 86.1 89.8 101.3 88.5

C4.2 93.5 93.5 84.0 86.7 99.7 86.7

C4.5 93.5 94.2 85.2 89.0 99.2 87.4

C2.7 92.1 92.7 85.1 89.1 98.1 86.4

C1.4 90.6 90.8 83.3 88.6 96.8 85.3

C0.5 89.0 89.3 82.2 86.7 95.2 84.2

C8.3 87.6 87.4 80.1 85.4 93.8 82.9

C6.4 86.4 85.8 80.4 84.1 92.1 81.8

C5.4 85.2 84.5 78.9 83.2 91.2 81.4

C3.9 83.9 83.1 77.3 82.3 89.8 81.4

C2.5 82.7 81.6 76.9 80.7 88.2 81.6

C1.5 81.7 80.8 75.8 80.2 87.2 82.4

C8.6 79.3 78.1 73.9 77.4 85.3 83.9

C7.3 77.9 76.4 76.3 77.1 86.2 86.3

C9.7 79.6 79.7 79.7 79.7 89.7 89.7

C4.7 84.7 84.7 84.7 84.7 94.7 94.7

C1.7 91.7 91.7 91.7 91.7 101.7 101.7

FOLDOUT FRAME 2

# SPL LOSSLESS DATA AT 100 ECCT RADIUS

QCSEE OTW ENGINE

BULK ABSORBER INLET

FULLY SUPPRESSED ENGINE

ENGINE WITH APPROACH FLAPS

READING NUMBERS = 95 96 97

CONFIGURATION NC = 112

SPEED = 3697. RPM

TEMPERATURE = 67.0 F

RELATIVE HUMIDITY = 54.0 PC

## SIDELINE PLANE

BCOM MICROPHONES - LOSSLESS DATA

MIC # 14 15 16 17

R 0. 31. 43. 55.

THETA,  $\theta_s$  90. 90. 90. 90.

Z 106. 91. 86. 81.

DISTANCE 91. 82. 83. 86.

PHI,  $\phi$  0. 22. 31. 39.

INDEX FREQ

1	50.	98.1	100.8	102.7	102.9
2	63.	98.3	100.3	100.8	101.2
3	80.	99.8	100.1	99.9	101.7
4	100.	98.1	99.1	100.2	101.7
5	125.	98.8	99.6	100.5	102.5
6	160.	98.3	98.8	99.9	101.5
7	200.	97.7	98.9	100.9	101.9
8	250.	96.8	98.1	99.4	101.7
9	315.	96.9	99.0	99.7	101.6
10	400.	96.9	98.0	99.9	100.4
11	500.	96.2	97.0	98.6	99.3
12	630.	94.2	95.7	96.6	98.0
13	800.	94.1	95.2	96.1	96.8
14	1000.	93.4	93.5	94.5	95.7
15	1250.	92.3	92.7	93.8	94.9
16	1600.	90.5	91.9	91.7	92.4
17	2000.	89.6	90.5	90.4	91.4
18	2500.	88.0	87.2	88.7	89.7
19	3150.	87.9	85.9	87.3	88.7
20	4000.	88.0	84.9	86.8	87.4
21	5000.	87.9	83.2	85.5	86.2
22	6300.	88.4	81.9	84.8	85.9
23	8000.	86.3	78.4	82.9	83.4
24	10000.	85.9	75.3	81.2	81.7
25	12500.	84.5	75.5	77.5	78.6
26	16000.	83.3	78.2	78.3	79.0
27	20000.	83.7	82.0	82.2	83.0

OASPL 109.3 110.3 111.4 112.6

FOLDOUT FRAME /

S

97

SPEED = 3697. RPM

PERCENT SPEED

97.0

FGK 20199

VE HUMIDITY = 54.0 PC

BAROMETER = 29.27 IN HG

XMU .792

S.S. 32

75

FOLDOUT FRAME

2

1

DATA OF 609. SUBSET NO. 32. READINGS 95 96 97

CCSEE OTW ENGINE  
BULK ABSORBER INLET  
FULLY SUPPRESSED ENGINE  
ENGINE WITH APPROACH FLAPS

*SPL* LOSSLESS ARRAY

*FLYOVER PLANE* DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERIC  
(FOR POWER AND DIRECTIVITY COMPUTATION)

*ENGINE CENTERLINE MICROPHONES*

ANGLE,  $\theta$ , 60. 90. 120.

COMPUTED CASPL 115.6 118.8 125.5

BAND FREQUENCY

1	50	108.9	113.2	119.0
2	63	106.7	113.2	117.9
3	80	108.9	110.2	115.5
4	100	107.4	107.7	114.0
5	125	103.7	106.0	113.4
6	160	100.5	103.2	113.5
7	200	97.7	101.4	112.1
8	250	98.2	101.9	112.4
9	315	99.3	102.1	112.8
10	400	100.5	103.0	111.6
11	500	98.8	101.5	109.8
12	630	97.0	99.2	110.4
13	800	96.7	97.7	108.7
14	1000	96.4	96.1	106.2
15	1250	94.8	94.0	101.0
16	1600	95.0	92.4	97.5
17	2000	93.1	92.3	93.8
18	2500	90.3	90.1	90.9
19	3150	89.0	88.7	88.4
20	4000	87.7	88.9	87.4
21	5000	85.8	85.8	87.3
22	6300	86.0	85.5	88.3
23	8000	83.4	83.1	89.7
24	10000	81.8	81.8	91.9
25	12500	85.2	85.2	95.2
26	16000	90.1	90.1	100.1
27	20000	97.0	97.0	107.0

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FOLDOUT FRAME 1

97

CONFIGURATION NO 112  
SPEED = 3697. RPM  
PERCENT SPEED = 97.0

0 S S L E S S A R R A Y

RADIUS WITH NO ATMOSPHERIC ATTENUATION  
AND DIRECTIVITY COMPUTATIONS)

76

FOLDOUT FRAME 2

DATA OF 609. SUBSET NO. 32. READINGS 95 96 97

SIX DECIBELS HAVE BEEN SUBTRACTED FROM THE ORIGINAL DATA.  
 CCSEE OTW ENGINE  
 BULK ABSORBER INLET  
 FULLY SUPPRESSED ENGINE  
 ENGINE WITH APPROACH FLAPS

*5PL* LCSSLESS ARRAY

ORIGINAL PAGE IS  
 OF POOR QUALITY

*FLYOVER AND*

DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERIC A  
 (FOR POWER AND DIRECTIVITY COMPUTATION)

ANGLE  $\theta$  0. 30. 40. 50. 60. 70. 80. 90. 100. 140. 150.

COMPUTED CASPL 109.7 111.2 110.4 111.0 111.1 112.4 113.4 114.2 115.1 117.5 117.3 1

BAND FREQUENCY

1	50	103.8	106.0	104.3	104.8	101.7	103.0	105.8	108.0	109.8	108.3	112.7	1
2	63	102.5	104.2	102.7	101.0	101.7	104.2	106.5	107.0	108.8	108.8	112.5	1
3	80	102.2	102.5	97.5	99.8	104.7	104.8	104.7	105.8	106.7	109.5	109.3	1
4	100	98.5	96.8	99.2	102.5	102.5	102.0	103.3	102.8	103.7	107.8	106.8	1
5	125	98.4	97.5	102.2	102.9	100.0	101.7	100.9	102.2	102.5	106.5	100.9	1
6	160	95.5	100.2	99.9	97.9	99.4	100.4	101.4	101.5	100.9	104.2	97.4	1
7	200	96.0	98.5	95.7	98.4	98.4	100.9	101.2	102.4	101.0	107.0	97.4	1
8	250	93.9	95.4	95.9	97.2	96.9	98.1	100.1	101.2	99.4	106.8	96.1	1
9	315	94.2	95.7	96.1	95.9	95.9	98.9	99.4	98.9	98.2	103.8	94.2	1
10	400	91.8	94.9	93.9	94.6	96.3	98.1	98.3	97.9	97.4	104.4	93.4	1
11	500	90.8	92.6	92.0	93.5	95.1	96.6	97.6	95.8	96.1	102.4	90.6	1
12	630	89.0	90.2	90.8	92.0	91.7	95.7	95.0	93.5	94.2	100.4	89.8	
13	800	87.4	89.7	90.4	92.0	94.2	94.9	95.2	93.9	94.4	98.9	89.9	
14	1000	85.7	88.7	89.2	90.9	91.7	93.9	93.4	92.6	93.1	96.7	89.4	
15	1250	95.1	87.1	87.8	89.3	90.1	92.6	91.9	90.8	90.6	94.0	87.8	
16	1600	97.5	87.8	87.5	88.7	89.2	91.3	90.5	89.3	89.8	91.3	86.5	
17	2000	96.1	86.8	86.8	87.8	87.9	90.6	88.8	87.8	88.6	88.2	85.9	
18	2500	91.8	82.8	83.9	85.4	86.6	88.8	87.3	86.3	85.4	86.1	83.9	
19	3150	92.5	83.0	83.2	84.0	85.3	87.5	86.2	85.0	84.2	84.1	82.8	
20	4000	81.5	82.2	82.0	83.0	84.0	86.0	84.9	83.9	83.0	79.9	81.9	
21	5000	79.3	81.1	81.1	81.5	82.3	84.3	83.3	82.6	81.5	78.8	81.0	
22	6300	77.8	80.0	79.8	80.5	80.8	83.3	82.3	82.0	80.5	77.9	79.8	
23	8000	75.1	77.0	77.2	76.8	77.3	80.4	79.2	79.2	77.5	76.6	77.7	
24	10000	76.0	76.5	76.3	75.8	75.8	78.8	77.5	77.4	76.6	78.0	76.1	
25	12500	79.2	79.2	79.2	79.2	79.2	79.1	79.1	79.1	79.2	79.8	79.2	
26	16000	84.1	84.1	84.1	84.1	84.1	84.1	84.1	84.1	84.1	84.0	84.1	
27	20000	91.0	91.0	91.0	91.0	91.0	91.0	91.0	91.0	91.0	91.0	91.0	1

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FOLDOUT FRAME /

FROM THE ORIGINAL DATA.

CONFIGURATION NO 112

SPEED = 3697. RPM

PERCENT SPEED = 97.0

C S S L E S S A R R A Y

ORIGINAL PAGE IS  
OF POOR QUALITYFT RADIUS WITH NO ATMOSPHERIC ATTENUATION  
(POWER AND DIRECTIVITY COMPUTATIONS)

80. 90. 100. 140. 150. 160. 180.

113.4 114.2 115.1 117.5 117.3 123.4 112.6

105.8 108.0 109.8 108.3 112.7 116.3 107.8

106.5 107.0 108.8 108.8 112.5 117.7 106.8

104.7 105.8 106.7 109.5 109.3 116.5 104.2

103.3 102.8 103.7 107.8 106.8 114.0 100.5

100.9 102.2 102.5 106.5 100.9 111.2 97.5

101.4 101.5 100.9 104.2 97.4 109.0 93.9

101.2 102.4 101.0 107.0 97.4 107.9 94.7

100.1 101.2 99.4 106.8 96.1 107.7 93.2

99.4 98.9 98.2 103.8 94.2 104.6 91.7

98.3 97.9 97.4 104.4 93.4 103.1 92.3

97.6 95.8 96.1 102.4 90.6 101.6 89.8

95.0 93.5 94.2 100.4 89.8 99.7 87.5

95.2 93.9 94.4 98.9 89.9 99.5 87.4

93.4 92.6 93.1 96.7 89.4 97.9 86.9

91.9 90.8 90.6 94.0 87.8 96.4 85.3

90.5 89.3 89.8 91.3 86.5 94.7 83.3

88.8 87.8 88.6 88.2 85.9 93.3 82.3

87.3 86.3 85.4 86.1 83.9 91.8 80.6

86.2 85.0 84.2 84.1 82.8 90.2 80.3

84.9 83.9 83.0 79.9 81.9 88.2 80.7

83.3 82.6 81.5 78.8 81.0 87.1 81.3

82.3 82.0 80.5 77.9 79.8 86.0 82.3

79.2 79.2 77.5 76.6 77.7 84.3 83.7

77.5 77.4 76.6 78.0 76.1 85.9 85.9

79.1 79.1 79.2 79.8 79.2 89.2 89.2

84.1 84.1 84.1 84.0 84.1 94.1 94.1

91.0 91.0 91.0 91.0 91.0 101.0 101.0



SPL LOSSLESS DATA AT 100 FEET RADIUS

QCSEE OTW ENGINE

BULK-ABSORBER INLET

FULLY SUPPRESSED ENGINE

ENGINE WITH TAKE OFF FLAPS

ORIGINAL PAGE IS  
OF POOR QUALITY

READING NUMBERS = 98 99 100

CONFIGURATION NC = 212

SPEED = 1790. RPM

TEMPERATURE = 63.0 F

RELATIVE HUMIDITY = 56.0 PC

SIDELINE PLANE

BOOM MICROPHONES - LOSSLESS DATA

MIC #	14	15	16	17
R	0.	31.	43.	55.
THETA, $\theta_s$	90.	90.	90.	90.
Z	106.	91.	86.	81.
DISTANCE	91.	82.	83.	86.
PHI, $\phi$	0.	22.	31.	39.

INDEX	FREQ				
1	50.	79.6	81.8	84.8	86.5
2	63.	81.8	81.2	83.2	84.7
3	80.	80.6	80.4	81.2	80.0
4	100.	79.0	77.4	79.4	80.5
5	125.	78.2	79.4	81.0	81.0
6	160.	76.5	77.1	78.7	79.9
7	200.	77.5	78.3	79.7	79.5
8	250.	76.5	78.3	78.4	79.2
9	315.	74.2	75.3	75.9	77.1
10	400.	72.7	72.8	73.1	73.7
11	500.	71.0	70.5	70.7	71.8
12	630.	72.9	69.7	70.4	70.6
13	800.	78.6	75.2	76.8	76.0
14	1000.	73.9	70.0	70.6	71.0
15	1250.	72.6	69.2	69.3	69.5
16	1600.	70.2	68.3	67.9	68.4
17	2000.	67.2	64.5	64.9	65.3
18	2500.	66.3	63.4	63.8	64.5
19	3150.	66.0	62.2	63.2	63.7
20	4000.	66.4	61.3	62.9	63.3
21	5000.	68.7	62.8	64.6	64.7
22	6300.	73.2	66.0	68.3	68.5
23	8000.	71.4	65.4	67.1	67.8
24	10000.	69.9	59.8	64.3	63.6
25	12500.	75.0	59.5	64.6	64.7
26	16000.	67.0	58.4	59.4	59.1
27	20000.	68.6	62.7	63.6	65.3

OASPL 89.8 89.4 91.1 91.9

FOLDOUT FRAME /

ORIGINAL PAGE IS  
OF POOR QUALITY

INE

FLAPS

99 100

SPEED = 1790. RPM

PERCENT SPEED

47.0

FGK 4093

RELATIVE HUMIDITY = 56.0 PC

BAROMETER = 29.57 IN HG

XMII .266

DATA

78

SS 33

FOLDOUT FRAME 2

DATA OF 615. SUBSET NO. 33. READINGS 98 99 100

QCSEE OTW ENGINE  
BULK-APSCORBER INLET  
FULLY SUPPRESSED ENGINE  
ENGINE WITH TAKE OFF FLAPS

SPL LOSSLESS ARPA

FLYOVER PLANE

DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERE  
(FOR POWER AND DIRECTIVITY COMPUTATION)

ENGINE CENTER LINE MICROPHONES

ANGLE,  $\theta_F$  60. 90. 120.

COMPUTED CASPL 94.9 94.4 94.5

BAND FREQUENCY

1	50	89.4	89.4	88.4
2	63	87.0	88.7	89.5
3	80	83.2	84.4	84.5
4	100	82.9	82.9	80.4
5	125	82.7	81.4	80.2
6	160	78.7	79.2	79.5
7	200	78.1	78.7	81.4
8	250	77.4	78.4	80.1
9	315	76.4	76.9	78.6
10	400	76.3	76.6	76.4
11	500	74.3	72.1	74.0
12	630	71.8	71.2	72.7
13	800	83.9	77.5	78.5
14	1000	76.6	72.1	73.9
15	1250	75.6	69.1	71.9
16	1600	78.4	69.0	69.8
17	2000	73.3	66.1	68.1
18	2500	74.0	65.8	68.0
19	3150	73.4	64.4	65.2
20	4000	72.8	65.1	63.5
21	5000	72.8	64.1	66.7
22	6300	78.4	67.4	69.9
23	8000	81.3	67.1	66.1
24	10000	74.3	63.3	63.1
25	12500	71.0	65.7	66.2
26	16000	70.3	70.7	70.8
27	20000	78.6	77.6	79.0

79

FOLDOUT FRAME

99 100

CONFIGURATION NO 212  
SPEED = 1790. RPM  
PERCENT SPEED = 47.0

LOSSLESS ARRAY

0 FT RADIUS WITH NO ATMOSPHERIC ATTENUATION  
POWER AND DIRECTIVITY COMPUTATIONS)

5

79

FOLDOUT FRAME 2

DATA OF 615. SUBSET NO. 33. READINGS 98 99 100

SIX DECIBELS HAVE BEEN SUBTRACTED FROM THE ORIGINAL DATA  
 QCSEE CTW ENGINE  
 PULK-APSORBER INLET  
 FULLY SUPPRESSED ENGINE  
 ENGINE WITH TAKE OFF FLAPS

ORIGINAL PAGE IS  
 OF POOR QUALITY

FLYOVER PLANE

SPL

LOSSLESS ARR

DATA AT 100.0 FT RADIUS WITH NO ATMOSP  
 (FOR POWER AND DIRECTIVITY COMP

ANGLE, $\theta$		0.	30.	40.	50.	60.	70.	80.	90.	100.	110.
COMPUTED CASPL		100.4	94.5	93.9	91.7	91.3	90.1	89.9	89.3	90.0	90.9
BAND FREQUENCY											
1	50	80.2	85.5	85.0	83.5	83.8	82.7	83.0	83.5	83.7	85.2
2	63	92.3	84.7	85.3	84.5	82.5	83.2	84.0	83.2	83.5	84.0
3	80	90.3	82.7	81.5	78.0	78.8	79.7	80.5	78.3	80.8	81.7
4	100	80.5	79.8	77.2	76.5	78.8	79.2	76.8	78.0	78.7	79.5
5	125	79.9	78.0	77.7	79.0	78.9	77.5	77.7	77.7	78.4	79.2
6	160	78.7	76.7	78.0	77.2	77.7	75.9	77.0	76.0	76.5	77.5
7	200	82.9	77.2	80.2	77.5	77.7	78.2	79.0	77.7	78.2	77.7
8	250	78.1	75.7	75.6	75.4	74.7	75.4	75.2	76.1	75.6	77.7
9	315	73.4	74.1	72.2	72.7	74.4	74.4	73.4	72.7	74.4	74.9
10	400	70.1	71.3	70.1	70.4	73.8	72.3	71.3	72.1	72.6	71.4
11	500	69.3	70.1	69.3	70.3	69.0	69.5	68.0	67.3	67.8	69.6
12	630	71.0	72.0	70.2	70.5	69.3	68.5	65.5	66.5	67.8	68.6
13	800	82.2	84.2	80.8	80.7	78.2	78.0	73.7	71.7	73.7	73.7
14	1000	80.9	77.4	75.2	73.7	72.0	70.7	68.2	66.5	67.4	68.0
15	1250	82.1	78.1	76.1	73.8	71.9	69.3	66.8	64.8	66.1	67.8
16	1600	84.3	83.0	80.2	77.8	74.7	71.5	68.0	64.7	65.5	65.7
17	2000	81.3	78.3	75.3	72.6	70.8	66.9	64.3	61.1	63.4	63.4
18	2500	81.9	80.9	77.8	74.6	72.1	67.3	63.6	61.3	62.3	63.3
19	3150	80.0	79.4	76.4	73.9	71.4	66.0	62.5	60.0	61.7	61.5
20	4000	82.3	78.8	76.3	74.1	72.3	66.4	62.6	59.1	61.1	60.6
21	5000	80.9	78.1	77.0	73.9	73.6	67.3	63.6	59.6	61.1	61.8
22	6300	98.0	82.5	81.3	78.1	77.8	72.3	67.4	62.2	62.9	63.5
23	8000	93.1	85.6	86.6	80.2	80.2	73.5	68.5	61.6	60.1	60.4
24	10000	79.4	76.1	79.7	76.1	77.7	71.7	65.9	57.8	57.0	58.2
25	12500	78.6	71.2	74.3	68.8	71.1	63.6	60.8	59.6	59.7	59.6
26	16000	80.5	71.5	75.7	70.1	70.8	64.5	64.7	64.7	64.7	64.7
27	20000	78.1	73.9	73.8	72.6	72.7	72.5	73.6	71.6	72.6	72.0

TED FROM THE ORIGINAL DATA.

CONFIGURATION NO 212

SPEED = 1790. RPM

PERCENT SPEED = 47.0

## L O S S L E S S A R R A Y

ORIGINAL PAGE IS  
OF POOR QUALITY0 FT RADIUS WITH NO ATMOSPHERIC ATTENUATION  
POWER AND DIRECTIVITY COMPUTATIONS)

.	80.	90.	100.	110.	120.	130.	140.
1	89.9	89.3	90.0	90.8	90.8	91.1	93.7
7	83.0	83.5	83.7	85.2	84.5	84.0	85.7
2	84.0	83.2	83.5	84.0	83.5	84.7	87.7
7	80.5	78.3	80.8	81.7	80.7	81.2	86.3
2	76.8	78.0	78.7	79.5	78.3	78.7	84.0
5	77.7	77.7	78.4	79.2	80.7	80.2	81.7
9	77.0	76.0	76.5	77.5	78.4	78.7	80.5
2	79.0	77.7	78.2	77.7	79.0	79.5	80.4
4	75.2	76.1	75.6	77.7	77.6	78.2	79.6
4	73.4	72.7	74.4	74.9	75.1	76.2	77.6
3	71.3	72.1	72.6	71.4	74.1	74.9	73.9
5	68.0	67.3	67.8	69.6	70.8	71.5	72.3
5	65.5	66.5	67.8	68.6	70.3	69.6	71.6
0	73.7	71.7	73.7	73.7	74.8	75.0	75.7
7	68.2	66.5	67.4	68.0	70.2	71.0	71.9
3	66.8	64.8	66.1	67.8	68.9	69.9	70.3
5	68.0	64.7	65.5	65.7	67.5	67.5	68.7
9	64.3	61.1	63.4	63.4	64.4	63.8	67.3
3	63.6	61.3	62.3	63.3	62.9	62.4	65.9
0	62.5	60.0	61.7	61.5	61.9	61.2	64.2
4	62.6	59.1	61.1	60.6	61.1	61.3	64.8
3	63.6	59.6	61.1	61.8	62.3	62.3	66.8
3	67.4	62.2	62.9	63.5	64.4	65.0	70.7
5	68.5	61.6	60.1	60.4	60.9	61.4	69.0
7	65.9	57.8	57.0	58.2	59.2	59.8	68.7
6	60.8	59.6	59.7	59.6	61.4	62.4	72.4
5	64.7	64.7	64.7	64.7	64.7	64.6	67.8
5	73.6	71.6	72.6	72.0	73.6	73.2	72.2

SPL

LOSSLESS DATA AT 100 FEET RADIUS

QCSEE CTK ENGINE

BULK-ABSORBER INLET

FULLY SUPPRESSED ENGINE

ENGINE WITH TAKE OFF FLAPS

READING NUMBERS = 101 102 103

CONFIGURATION NO = 212

SPEED = 2472. RPM

TEMPERATURE = 64.0 F

RELATIVE HUMIDITY = 51.0 PC

SIDELINE PLANE

BCOM MICROPHONES - LOSSLESS DATA

MIC # 14 15 16 17

R 0. 31. 43. 55.

THETA,  $\theta$  90. 90. 90. 90.

Z 106. 91. 86. 81.

DISTANCE 91. 82. 83. 86.

PHI,  $\phi$  0. 22. 31. 39.

INDEX FREQ

1	50.	87.1	90.6	94.0	94.7
2	63.	85.8	87.8	90.8	92.7
3	80.	88.1	88.3	89.9	89.7
4	100.	84.5	86.3	88.4	89.0
5	125.	87.0	87.5	91.2	89.7
6	160.	94.3	85.9	89.4	88.9
7	200.	86.5	86.9	89.0	89.2
8	250.	96.5	87.4	89.4	90.1
9	315.	83.7	85.6	87.9	88.2
10	400.	82.5	83.6	86.2	86.4
11	500.	80.5	81.3	85.2	84.9
12	630.	79.6	80.3	81.8	82.3
13	800.	80.2	79.0	80.3	80.8
14	1000.	80.4	78.4	79.8	80.0
15	1250.	81.6	78.7	81.2	81.7
16	1600.	76.7	74.8	75.5	76.1
17	2000.	75.6	74.0	74.9	75.6
18	2500.	76.2	74.1	74.5	75.6
19	3150.	76.2	72.1	73.2	73.9
20	4000.	76.1	71.5	72.6	73.1
21	5000.	75.7	70.7	72.3	72.9
22	6300.	76.7	69.9	72.7	73.3
23	8000.	77.0	68.1	71.6	71.7
24	10000.	77.7	67.5	72.4	73.1
25	12500.	76.1	63.3	68.9	70.5
26	16000.	74.6	59.2	69.1	69.7
27	20000.	70.0	64.3	74.4	75.6

CASPL 96.9 97.9 100.5 100.9

FOLDOUT FRAME

WE

FLAPS

2 103

SPEED = 2472. RPM

PERCENT SPEED 65.0

FGK 8658

RELATIVE HUMIDITY = 51.0 PC

BAROMETER = 29.56 IN HG

XM, .411

DATA

S.S. 34

81

FOLDOUT FRAME

2

FRAME /



DATA OF 615. SUBSET NO. 34. READINGS 101 102 103

QC SEE OTW ENGINE  
PULK-ABSORBER INLET  
FULLY SUPPRESSED ENGINE  
ENGINE WITH TAKE OFF FLAPS

SPL LOSSLESS ARRAY

FLYOVER PLANE DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERE  
(FOR POWER AND DIRECTIVITY COMPUTATION)

ENGINE CENTERLINE MICROPHONES

ANGLE,  $\theta$ , 60. 90. 120.

COMPUTED CASPL 103.9 104.2 105.7

BAND FREQUENCY

1	50	99.0	98.7	101.9
2	63	94.5	97.7	97.2
3	80	92.9	94.7	95.4
4	100	92.7	93.4	91.5
5	125	92.0	92.2	92.5
6	160	89.5	89.7	89.7
7	200	88.4	88.1	91.7
8	250	87.4	88.2	91.6
9	315	87.1	88.8	91.9
10	400	86.6	88.0	90.1
11	500	84.5	85.3	88.0
12	630	81.3	83.0	86.0
13	800	82.2	82.2	85.9
14	1000	83.4	81.6	84.1
15	1250	88.6	80.6	83.6
16	1600	82.7	77.2	79.4
17	2000	83.1	77.0	79.1
18	2500	85.8	78.2	78.8
19	3150	84.4	76.1	75.9
20	4000	84.2	76.5	73.2
21	5000	82.7	74.7	74.4
22	6300	83.1	74.2	74.5
23	8000	83.4	72.8	70.8
24	10000	84.9	75.3	72.7
25	12500	84.1	76.2	76.3
26	16000	80.8	81.5	81.6
27	20000	89.7	89.5	90.1

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FOLDOUT FRAME /

102 103

CONFIGURATION NO 212  
SPEED = 2472. RPM  
PERCENT SPEED = 65.0

LCSSLESS ARRAY

00.0 FT RADIUS WITH NO ATMOSPHERIC ATTENUATION  
(OR POWER AND DIRECTIVITY COMPUTATIONS)

82

FOLDOUT FRAME 2

DATA OF 615. SUBSET NO. 34. READINGS 101 102 103

SIX DECIBELS HAVE BEEN SUBTRACTED FROM THE ORIGINAL DATA.  
 CCSEE OTW ENGINE  
 BULK-ABSORBER INLET  
 FULLY SUPPRESSED ENGINE  
 ENGINE WITH TAKE OFF FLAPS

ORIGINAL PAGE IS  
 OF POOR QUALITY

SPL LOSSLESS ARRAY

FLY OVER PLANE DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERIC  
 (FOR POWER AND DIRECTIVITY COMPUTATION)

ANGLE  $\theta$  0. 30. 40. 50. 60. 70. 80. 90. 100. 110. 120.  
 COMPUTED CASPL 100.0 101.7 100.7 100.4 99.8 99.3 98.9 99.6 100.3 101.6 101.1

RAND FREQUENCY

1	50	87.8	94.2	95.7	93.5	91.8	92.8	90.8	93.2	95.0	96.0	95.0
2	63	87.7	92.5	93.2	91.2	90.7	89.2	91.2	92.8	92.5	93.2	92.0
3	80	88.8	90.7	98.3	87.7	88.2	89.2	90.8	90.2	89.3	91.7	91.7
4	100	99.3	87.8	96.2	86.8	99.2	88.7	86.8	87.7	88.5	90.7	90.0
5	125	98.2	84.7	86.7	98.2	98.2	87.2	87.7	87.5	89.9	90.5	91.1
6	160	86.4	84.9	36.5	86.4	86.0	87.0	85.9	86.4	87.2	89.5	90.2
7	200	86.5	85.9	87.4	86.7	86.0	87.9	87.7	88.0	87.9	88.4	91.0
8	250	83.1	84.6	85.4	84.6	84.6	85.9	86.1	86.6	86.9	89.5	89.9
9	315	80.9	82.7	83.2	83.6	84.6	85.7	84.6	84.9	85.9	87.4	87.4
10	400	77.9	80.6	80.8	81.9	84.6	83.8	83.4	84.9	85.1	84.5	87.6
11	500	75.5	77.8	78.5	80.8	79.5	81.0	80.8	80.3	81.6	83.6	85.0
12	630	75.6	76.8	77.8	77.5	78.3	77.6	76.3	79.0	80.5	82.3	83.0
13	800	79.0	78.3	78.3	78.3	77.7	77.7	78.2	77.8	79.5	81.2	82.7
14	1000	85.2	83.2	82.1	81.6	79.7	77.9	78.2	77.5	78.9	79.7	81.0
15	1250	91.6	90.1	87.9	87.4	95.9	81.4	81.8	78.6	79.8	80.4	81.1
16	1600	86.3	85.8	82.0	81.0	79.5	76.0	74.7	74.0	75.0	76.7	77.2
17	2000	87.3	87.5	83.3	82.8	80.6	77.0	75.0	72.6	75.0	75.8	75.8
18	2500	87.6	90.5	86.0	85.8	82.8	80.5	77.1	73.3	74.5	76.0	74.5
19	3150	85.4	86.9	80.6	83.7	82.1	78.2	74.6	71.7	72.9	73.7	72.4
20	4000	85.0	87.3	90.1	84.0	82.9	78.5	75.0	71.3	71.9	72.5	71.3
21	5000	84.0	86.5	78.0	82.8	82.9	78.5	75.0	70.7	70.8	71.2	70.7
22	6300	82.9	85.7	75.6	82.8	82.9	78.9	74.5	69.9	69.8	70.0	69.8
23	8000	84.1	87.2	78.1	85.0	82.4	78.4	73.4	68.1	67.4	67.5	67.4
24	10000	81.7	87.2	82.1	88.5	86.2	81.7	77.4	70.2	67.6	66.7	66.9
25	12500	76.0	82.4	72.7	82.5	82.7	77.4	75.2	70.1	70.2	70.3	70.3
26	16000	75.2	79.5	76.2	80.9	78.6	75.3	75.1	75.5	75.5	75.5	75.6
27	20000	84.7	84.5	85.5	85.1	84.5	85.6	83.9	82.9	83.1	83.5	84.3

83

FOLDOUT FRAME

ED FROM THE ORIGINAL DATA.

CONFIGURATION NO 212

SPEED = 2472. RPM

PERCENT SPEED = 65.0

# LOSSLESS ARRAY

0 FT RADIUS WITH NO ATMOSPHERIC ATTENUATION  
POWER AND DIRECTIVITY COMPUTATIONS)

ORIGINAL PAGE IS  
OF POOR QUALITY

. 80. 90. 100. 110. 120. 130. 180.

3 98.9 99.6 100.3 101.6 101.8 101.3 104.6

8	90.8	93.2	95.0	96.0	95.7	94.2	97.5
2	91.2	92.8	92.5	93.2	92.0	92.5	97.5
2	90.8	90.2	89.3	91.7	91.7	92.0	95.9
7	86.8	87.7	88.5	90.7	90.0	89.2	95.2
2	87.7	87.5	89.9	90.5	91.7	91.7	94.0
0	85.9	86.4	87.2	89.9	90.2	89.7	93.0
9	87.7	88.0	87.9	88.4	91.0	90.4	92.4
9	86.1	86.6	86.9	89.9	89.9	89.6	90.7
7	84.6	84.9	85.9	87.4	87.4	87.9	89.1
8	83.4	84.9	85.1	84.9	87.6	86.8	86.1
0	80.8	80.3	81.6	83.6	85.0	84.5	84.6
6	76.3	79.0	80.5	82.3	83.0	81.3	93.1
7	78.2	77.8	79.5	81.2	82.7	81.3	82.7
9	78.2	77.5	78.9	79.7	81.0	79.5	81.4
4	81.8	78.6	79.8	80.4	81.1	81.3	81.6
0	74.7	74.0	75.0	76.7	77.2	75.5	78.7
0	75.0	72.6	75.0	75.8	75.8	74.5	77.5
5	77.1	73.3	74.5	76.0	74.5	74.0	76.3
2	74.6	71.7	72.9	73.7	72.4	71.4	75.4
5	75.0	71.3	71.9	72.5	71.3	70.5	74.8
5	75.0	70.7	70.8	71.2	70.7	70.2	74.0
9	74.5	69.9	69.8	70.0	69.8	70.0	74.6
4	73.4	68.1	67.4	67.5	67.4	68.1	73.5
7	77.4	70.2	67.6	66.7	66.9	67.4	74.4
1	75.2	70.1	70.2	70.3	70.3	70.3	72.2
1	75.1	75.5	75.5	75.5	75.6	75.5	75.3
1	83.9	82.9	83.1	83.5	84.3	82.9	83.3

83

FOLDOUT FRAME

2

*SPL* LOSSLESS DATA AT 100 ECCT RADIUS

QCSEE CTW ENGINE

BULK-APSCREER INLET

ORIGINAL PAGE IS  
OF POOR QUALITY

FULLY SUPPRESSED ENGINE

ENGINE WITH TAKE OFF FLAPS

READING NUMBERS = 104 105 106

CONFIGURATION NO = 212

SPEED = 3081. RPM

TEMPERATURE = 64.0 F

RELATIVE HUMIDITY = 49.0 PC

*STOBLING PLANE*

BCCM MICROPHONES - LOSSLESS DATA

MIC # 14 15 16 17

R 0. 31. 43. 55.

THETA,  $\theta$  90. 90. 90. 90.

Z 106. 91. 86. 81.

DISTANCE 91. 82. 83. 86.

PHI,  $\phi$  0. 22. 31. 39.

INDEX FREQ

1	50.	92.0	95.4	98.2	100.0
2	63.	92.6	92.6	94.7	96.7
3	80.	92.3	92.6	94.5	94.9
4	100.	91.6	91.9	92.7	94.5
5	125.	93.2	93.6	94.9	95.0
6	160.	91.7	91.6	93.5	95.7
7	200.	91.9	91.6	92.7	94.7
8	250.	91.5	92.5	92.9	94.6
9	315.	89.5	91.8	93.1	94.6
10	400.	89.2	90.3	91.9	92.9
11	500.	88.4	89.3	90.6	91.6
12	630.	86.6	88.0	88.8	88.9
13	800.	87.4	86.7	87.6	88.1
14	1000.	86.1	85.9	86.3	86.8
15	1250.	85.8	85.1	85.7	85.8
16	1600.	86.2	84.6	85.7	85.9
17	2000.	82.2	81.5	82.3	83.0
18	2500.	82.7	81.4	82.0	83.2
19	3150.	84.0	83.3	83.5	84.7
20	4000.	84.1	80.7	81.9	82.3
21	5000.	82.6	79.1	81.0	81.6
22	6300.	82.7	78.3	81.6	81.7
23	8000.	80.9	75.2	79.3	79.6
24	10000.	90.9	72.5	77.8	78.3
25	12500.	79.5	68.3	74.7	75.8
26	16000.	78.3	69.1	74.0	74.3
27	20000.	76.5	73.7	74.7	74.6

OASPL 102.9 103.4 105.0 106.4

FOLDOUT FRAME 1

ORIGINAL PAGE IS  
OF POOR QUALITY

06

SPEED = 3081. RPM

PERCENT SPEED 81.0

FGK 14037

WIND HUMIDITY = 49.0 PC

BAROMETER = 29.56 IN HG

XMII .567

55.35

84

FOLDOUT FRAME

2

DATA OF 615. SUBSET NO. 35. READINGS 104 105 106

CCSEE OTW ENGINE  
BULK-ABSORBER INLET  
FULLY SUPPRESSED ENGINE  
ENGINE WITH TAKE OFF FLAPS

ORIGINAL PAGE IS  
OF POOR QUALITY

SPL LOSSLESS ARRAY

FLYOVER PLANE DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERE  
(FOR POWER AND DIRECTIVITY COMPUTATION)

ENGINE CENTERLINE MICROPHONES

ANGLE,  $\theta$  60. 90. 120.

COMPUTED CASPL 109.1 110.8 112.1

BAND FREQUENCY

1	50	104.4	103.9	106.5
2	63	100.2	105.7	104.7
3	80	98.9	102.0	103.4
4	100	97.7	99.9	100.4
5	125	97.4	98.4	99.0
6	160	94.0	96.7	97.0
7	200	93.6	94.2	98.2
8	250	92.2	94.2	98.4
9	315	92.6	94.9	99.4
10	400	92.6	95.0	98.3
11	500	90.8	93.3	96.0
12	630	88.8	91.3	93.8
13	800	89.5	90.7	93.4
14	1000	87.7	89.4	91.9
15	1250	87.8	87.8	90.0
16	1600	91.0	88.4	88.2
17	2000	87.1	85.1	86.5
18	2500	90.0	85.5	85.8
19	3150	93.1	86.8	84.4
20	4000	91.2	86.4	81.4
21	5000	89.9	84.4	81.6
22	6300	90.0	84.2	82.0
23	8000	89.0	81.9	77.0
24	10000	84.9	80.1	75.5
25	12500	85.3	77.2	76.8
26	16000	82.5	81.9	81.9
27	20000	89.5	89.6	89.2

85

FOLDOUT FRAME /

15 106

CONFIGURATION NO 212  
SPEED = 3081. RPM  
PERCENT SPEED = 81.0

LOSSLESS ARRAY

FT RADIUS WITH NO ATMOSPHERIC ATTENUATION  
(POWER AND DIRECTIVITY COMPUTATIONS)

ORIGINAL PAGE IS  
OF POOR QUALITY

85

FOLDOUT FRAME

2



DATA OF 615. SUBSET NO. 35. READINGS 104 105 106

SIX DECIBELS HAVE BEEN SUBTRACTED FROM THE ORIGINAL DATA.

OCSEE OTW ENGINE  
BULK-ABSORBER INLET  
FULLY SUPPRESSED ENGINE  
ENGINE WITH TAKE OFF FLAPS

ORIGINAL PAGE IS  
OF POOR QUALITY

SPL LCSSLESS ARPA

FLYOVER PLANE DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERIC  
(FOR POWER AND DIRECTIVITY COMPUTATION)

ANGLE OF 0. 30. 40. 50. 60. 70. 80. 90. 100. 110. 120.

COMPUTED CASPL 104.7 105.8 104.5 104.5 105.3 104.6 105.1 105.4 107.9 110.5 109.5

BAND FREQUENCY

1	50	94.3	98.8	98.7	98.7	99.8	96.8	96.5	98.5	102.0	104.8	103.8
2	63	94.5	99.2	96.0	95.0	96.2	95.7	97.7	98.7	100.7	102.7	100.8
3	80	95.0	96.3	94.5	93.0	93.0	94.7	97.2	95.8	98.0	100.8	100.8
4	100	94.8	92.8	89.8	91.7	93.0	94.7	94.2	94.2	97.2	99.8	99.8
5	125	92.7	90.2	91.7	92.5	94.2	94.0	93.9	93.4	97.4	99.9	99.9
6	160	90.9	89.0	91.7	91.7	92.2	93.0	92.9	92.7	94.5	97.4	98.8
7	200	89.9	91.5	91.2	91.0	91.0	93.4	92.4	94.0	95.7	97.5	98.8
8	250	87.6	89.1	89.4	89.9	89.4	89.9	92.2	92.2	92.9	97.2	97.2
9	315	85.6	88.2	88.2	89.6	90.1	91.6	91.2	90.4	93.2	95.1	96.8
10	400	83.8	86.6	86.4	88.1	89.9	89.9	89.9	91.1	92.9	93.9	96.8
11	500	82.8	85.0	85.1	88.0	86.0	87.5	88.0	87.3	88.8	92.0	93.8
12	630	80.8	82.6	84.0	84.5	85.6	85.0	84.8	86.3	88.3	90.8	91.8
13	800	83.7	83.3	83.3	84.7	85.2	85.2	86.2	85.2	87.8	90.0	91.8
14	1000	84.9	84.6	83.7	83.5	84.2	84.4	85.2	84.4	86.9	88.4	89.8
15	1250	89.3	87.9	85.6	83.8	84.9	83.4	83.6	82.9	85.8	87.1	87.8
16	1600	95.3	92.0	88.7	86.5	88.2	85.2	83.7	83.5	85.3	86.0	86.8
17	2000	88.3	88.3	86.5	84.3	84.6	81.8	81.6	80.5	83.3	83.8	84.8
18	2500	90.0	91.0	88.5	87.2	87.5	84.3	83.2	81.5	83.0	83.0	83.8
19	3150	91.8	93.4	91.8	93.1	90.9	87.6	85.9	85.1	83.3	83.6	84.8
20	4000	91.9	89.5	88.4	87.7	89.2	85.2	84.2	81.2	81.5	80.7	80.8
21	5000	90.6	88.1	87.1	86.9	88.4	84.9	83.9	80.7	80.2	79.6	78.8
22	6300	89.1	87.1	85.2	86.8	88.0	83.8	83.0	79.8	79.6	78.4	77.8
23	8000	84.7	84.9	81.0	84.2	85.2	80.9	80.4	76.9	76.3	75.6	74.8
24	10000	33.1	83.2	78.2	82.4	83.9	79.2	79.1	74.9	74.8	76.9	76.8
25	12500	79.3	80.5	75.1	79.3	81.3	76.5	77.0	72.3	72.3	80.7	80.8
26	16000	78.4	79.7	77.2	78.9	78.1	76.2	75.9	75.8	75.7	85.9	85.8
27	20000	83.1	83.7	82.6	83.4	83.6	82.8	83.9	84.6	83.2	93.6	93.8

86

FOLDOUT FRAME 1

CTED FROM THE ORIGINAL DATA.

CONFIGURATION NO 212  
SPEED = 3081. RPM  
PERCENT SPEED = 81.0

L C S S L E S S   A R R A Y

.0 FT RADIUS WITH NO ATMOSPHERIC ATTENUATION  
POWER AND DIRECTIVITY COMPUTATIONS)

ORIGINAL PAGE IS  
OF POOR QUALITY

0.    90.    90.    100.    110.    120.    130.    180.

.6 105.1 105.4 107.9 110.5 109.9 109.6 113.6

.8	96.5	98.5	102.0	104.8	102.2	103.0	107.2
.7	97.7	98.7	100.7	102.7	110.5	101.8	106.2
.7	97.2	95.8	98.0	100.8	100.8	99.8	105.3
.7	94.2	94.2	97.2	99.8	99.2	97.7	104.7
.0	93.9	93.4	97.4	99.9	99.5	99.9	103.5
.0	92.9	92.7	94.5	97.4	98.9	98.5	101.4
.4	92.4	94.0	95.7	97.5	98.9	97.5	100.4
.9	92.2	92.2	92.9	97.2	97.7	95.7	98.2
.6	91.2	90.4	93.2	95.1	96.4	94.9	96.2
.9	89.9	91.1	92.9	93.9	96.9	94.3	93.9
.5	88.0	87.3	88.8	92.0	93.5	91.5	92.5
.0	84.8	86.3	88.3	90.8	91.6	89.0	90.3
.2	86.2	85.2	87.8	90.0	91.5	89.3	89.8
.4	85.2	84.4	86.9	88.4	89.5	86.5	89.0
.4	83.6	82.9	85.8	87.1	87.8	85.8	98.3
.2	83.7	83.5	85.3	86.0	86.7	85.2	87.3
.8	81.6	80.5	83.3	83.8	84.1	82.0	85.8
.3	83.2	81.5	83.0	83.0	83.1	81.0	84.5
.6	85.9	85.1	83.3	83.6	82.4	80.4	83.6
.2	84.2	81.2	81.5	80.7	80.4	78.9	83.0
.9	83.9	80.7	80.2	79.6	78.7	77.6	81.7
.8	83.0	79.8	79.6	78.4	77.6	77.1	81.3
.9	80.4	76.9	76.3	75.6	74.8	74.5	78.9
.2	79.1	74.9	74.8	76.9	76.9	76.9	78.4
.5	77.0	72.3	72.3	80.7	80.7	80.7	80.9
.2	75.9	75.8	75.7	85.9	85.9	86.0	85.9
.8	83.9	84.6	83.2	93.6	93.6	94.6	93.4

86

*SPL* LOSSLESS DATA AT 100 FEET RADIALS

QCSEE OTW ENGINE

BULK-ABSORBER INLET

FULLY SUPPRESSED ENGINE

ENGINE WITH TAKE OFF FLAPS

READING NUMBERS = 107 108 109

CONFIGURATION NC = 212

SPEED = 3272. RPM

TEMPERATURE = 64.0 F

RELATIVE HUMIDITY = 53.0 PC

*SIDELINE PLANE*

BCCM MICROPHONES - LOSSLESS DATA

MIC # 14 15 16 17

R 0. 31. 43. 55.

THETA, *θ* 90. 90. 90. 90.

Z 106. 91. 86. 81.

DISTANCE 91. 82. 83. 86.

PHI, *φ* 0. 22. 31. 39.

INDEX FREQ

1	50.	97.0	97.1	99.0	100.7
2	63.	94.5	96.1	96.7	98.0
3	80.	94.3	95.9	95.9	97.2
4	100.	94.1	93.9	95.7	97.2
5	125.	95.3	95.6	95.9	97.9
6	160.	93.5	93.9	97.0	97.5
7	200.	94.2	94.8	96.4	97.2
8	250.	93.7	95.1	96.0	97.7
9	315.	92.2	94.5	96.1	97.1
10	400.	91.9	93.6	95.4	95.4
11	500.	91.0	93.0	93.7	94.8
12	630.	89.4	91.5	91.4	92.4
13	800.	89.9	89.8	90.9	92.1
14	1000.	88.4	88.9	89.5	90.6
15	1250.	87.6	88.1	88.7	89.5
16	1600.	87.7	87.9	88.5	89.2
17	2000.	84.9	85.2	86.3	86.9
18	2500.	84.9	84.9	85.4	87.1
19	3150.	87.0	85.9	87.2	88.2
20	4000.	85.4	82.8	84.4	85.4
21	5000.	85.0	82.6	84.9	85.7
22	6300.	85.1	81.5	84.3	85.4
23	8000.	82.8	78.0	82.1	82.7
24	10000.	81.7	75.2	80.4	81.0
25	12500.	80.7	70.7	76.9	78.3
26	16000.	78.9	69.0	76.0	76.7
27	20000.	76.6	72.5	75.3	75.2

FOLDOUT FRAME 1

OASPL 105.4 106.1 107.4 108.6

USE THIS DATA WITH  
CAUTION -

DURING READING

FLAP SKIN PEELED BACK  
INTO AIRSTREAM, GENERATING NOISE

SPEED = 3272. RPM

PERCENT SPEED

86.0

FGK 16220

ATIVE HUMIDITY = 53.0 PC

BAROMETER = 29.56 IN HG

X111 .632

ATA

S.S. 36

AME 1

87

FOLDOUT FRAME

2

DATA OF 415. SUBSET NO. 36. READINGS 107 108 109

CCSEE CTW ENGINE  
BULK-ABSORBER INLET  
FULLY SUPPRESSED ENGINE  
ENGINE WITH TAKE OFF FLAPS

SPL LOSSLESS ARRAY

FLYOVER PLANE DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERE  
(FOR POWER AND DIRECTIVITY COMPUTATION)

ENGINE CENTERLINE MICROPHONES

ANGLE OF 60. 90. 120.

COMPUTED CASPL 111.1 113.0 116.1

BAND FREQUENCY

1	50	106.0	106.7	109.9
2	63	102.4	106.9	109.0
3	80	100.4	104.2	107.7
4	100	99.9	101.7	103.5
5	125	99.7	101.9	103.7
6	160	97.2	98.7	100.7
7	200	96.2	95.6	101.9
8	250	95.1	96.1	102.6
9	315	95.6	97.8	103.6
10	400	96.0	98.5	102.5
11	500	94.0	96.5	100.0
12	630	91.7	94.0	98.0
13	800	91.9	94.0	98.0
14	1000	91.2	92.4	95.9
15	1250	90.6	91.0	93.6
16	1600	95.9	92.2	93.9
17	2000	89.3	89.0	91.0
18	2500	91.7	88.8	90.0
19	3150	94.9	89.6	88.4
20	4000	90.1	88.1	85.0
21	5000	90.5	87.0	85.8
22	6300	89.3	86.4	85.7
23	8000	87.9	83.5	81.1
24	10000	83.3	81.4	82.4
25	12500	83.3	77.6	86.0
26	16000	80.9	80.9	91.1
27	20000	97.9	88.0	98.0

88

FOLDOUT FRAME /

108 109

CONFIGURATION NO 212  
SPEED = 3272. RPM  
PERCENT SPEED = 86.0

LOSSLESS ARRAY

10 FT RADIUS WITH NO ATMOSPHERIC ATTENUATION  
(POWER AND DIRECTIVITY COMPUTATIONS)

88

FOLDOUT FRAME

2

DATA OF 615. SUBSET NO. 26. READINGS 107 108 109

SIX DECIBELS HAVE BEEN SUBTRACTED FROM THE ORIGINAL DATA.  
 QCSEE OTW ENGINE  
 BULK-ABSORBER INLET  
 FULLY SUPPRESSED ENGINE  
 ENGINE WITH TAKE OFF FLAPS

SPL LOSSLESS ARRAY

ORIGINAL PAGE IS  
 OF POOR QUALITY

FLYOVER PLANE DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERIC  
 (FOR POWER AND DIRECTIVITY COMPUTATION)

ANGLE OF 0. 30. 40. 50. 60. 70. 80. 90. 100. 110. 120.

COMPUTED CASPL 106.4 107.6 106.9 106.3 107.3 106.9 108.0 108.0 110.6 111.2 111.2

BAND FREQUENCY

1	50	95.5	100.7	101.2	98.2	100.5	98.8	100.7	101.7	103.8	104.3	104.3
2	63	96.2	99.8	99.5	97.8	97.5	97.5	100.2	100.7	102.5	102.2	102.2
3	80	95.8	97.0	95.0	95.0	95.3	97.0	98.3	99.0	101.7	102.3	102.3
4	100	96.8	93.5	91.8	93.3	96.0	96.3	97.8	97.2	100.3	100.0	100.0
5	125	94.5	91.2	93.5	96.0	96.9	95.7	96.5	96.5	99.7	100.2	100.2
6	160	93.0	92.7	94.4	93.7	96.0	96.2	96.4	94.2	98.2	98.9	100.0
7	200	92.5	92.9	94.5	93.2	95.2	95.7	96.5	95.4	98.4	98.5	100.0
8	250	89.7	91.7	90.9	91.6	93.4	92.9	94.4	93.9	96.9	99.7	100.0
9	315	88.6	90.6	90.9	91.7	93.9	93.6	94.2	93.4	96.2	97.7	99.7
10	400	86.3	89.1	89.3	90.3	93.6	93.1	93.3	94.1	95.8	96.1	100.0
11	500	85.6	86.6	87.6	89.5	89.6	90.8	91.5	90.1	92.6	95.0	96.6
12	630	83.8	85.5	86.8	86.0	89.5	87.6	86.4	89.1	92.6	94.6	95.5
13	800	84.0	85.3	86.8	87.0	98.3	87.7	89.7	88.3	91.5	92.8	94.4
14	1000	84.7	85.7	86.0	86.0	87.7	86.9	88.9	87.4	90.7	91.7	93.3
15	1250	88.9	89.1	97.3	86.4	86.9	86.8	87.3	86.6	89.1	90.1	91.7
16	1600	96.2	98.7	94.5	94.3	92.2	93.5	89.0	88.2	89.7	91.3	92.8
17	2000	89.6	88.3	86.3	85.9	86.1	85.1	85.1	83.6	86.6	87.1	87.7
18	2500	93.6	90.8	89.3	88.0	87.8	86.5	86.5	83.6	86.0	85.6	86.6
19	3150	96.4	95.2	92.5	92.6	91.9	89.9	88.0	85.7	85.9	86.0	85.5
20	4000	90.8	90.6	96.6	89.0	87.1	85.8	84.6	81.8	83.5	83.3	83.3
21	5000	92.0	91.8	89.7	91.0	88.4	86.3	84.3	82.1	83.1	82.8	82.8
22	6300	91.1	90.2	88.1	89.4	85.1	85.4	82.4	80.7	81.9	81.4	81.4
23	8000	88.0	87.7	84.9	86.6	82.1	82.2	79.0	77.5	78.9	78.2	78.2
24	10000	85.9	86.3	83.1	84.9	80.1	81.0	76.8	75.1	77.3	77.1	76.6
25	12500	79.8	82.9	79.8	81.9	76.8	78.0	74.1	71.8	79.9	79.9	79.9
26	16000	80.9	83.5	77.2	80.7	75.4	77.2	74.7	74.8	85.0	85.0	85.0
27	20000	82.4	82.1	81.4	81.2	82.0	81.5	82.0	82.0	92.0	92.0	92.0

108 109

ACTED FROM THE ORIGINAL DATA.

CONFIGURATION NO 212

SPEED = 3272. RPM

PERCENT SPEED = 86.0

L LOSSLESS ARRAY

0.3 FT RADIUS WITH NO ATMOSPHERIC ATTENUATION  
R POWER AND DIRECTIVITY COMPUTATIONS)

ORIGINAL PAGE IS  
OF POOR QUALITY

70. 80. 90. 100. 110. 120. 130. 180.

6.9 108.0 108.0 110.6 111.2 112.9 111.5 117.2

8.8	100.7	101.7	103.8	104.3	106.0	104.7	110.5
7.5	100.2	100.7	102.5	102.2	103.0	104.2	110.7
7.0	98.3	99.0	101.7	102.3	102.9	102.5	108.5
6.3	97.8	97.2	100.3	100.0	101.7	101.5	107.5
5.7	96.5	96.5	99.7	100.2	102.5	101.0	106.9
6.2	96.4	94.2	98.2	98.9	101.9	98.9	105.2
5.7	96.5	95.4	98.4	98.5	102.0	98.9	104.2
2.9	94.4	93.9	96.9	99.7	100.6	97.2	102.6
3.6	94.2	93.4	96.2	97.7	99.6	96.9	101.1
3.1	93.3	94.1	95.8	96.1	100.1	96.6	99.3
0.8	91.5	90.1	92.6	95.0	96.8	94.0	97.0
7.6	86.4	89.1	92.6	94.6	95.1	91.5	95.8
7.7	89.7	88.3	91.5	92.8	94.8	91.8	95.2
6.9	88.9	87.4	90.7	91.7	93.2	89.0	93.7
6.8	87.3	86.6	89.1	90.1	91.1	88.1	93.3
3.5	89.0	88.2	89.7	91.3	92.2	91.0	92.3
5.1	85.1	83.6	86.6	87.1	87.6	84.6	91.1
6.5	86.5	83.6	86.0	85.6	86.3	82.8	89.6
9.9	88.0	85.7	85.9	86.0	85.2	82.0	89.0
5.8	84.6	81.8	83.5	83.3	83.3	81.0	88.3
5.3	84.3	82.1	83.1	82.8	82.1	80.1	86.8
5.4	82.4	80.7	81.9	81.4	81.6	79.6	85.6
2.2	79.0	77.5	78.9	78.2	78.4	76.9	83.2
1.0	76.8	75.1	77.3	77.1	76.9	77.0	82.7
9.0	74.1	71.8	79.9	79.9	79.9	79.9	80.9
7.2	74.7	74.8	85.0	85.0	85.0	85.0	84.9
1.5	82.0	82.0	92.0	92.0	92.0	92.0	92.0

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FOLDOUT FRAME

2



# *SPL* LCSSLESS DATA AT 100 FOOT RADIUS

QCSEE CTW ENGINE -

PULK-ABSORBER INLET

FULLY SUPPRESSED ENGINE

ENGINE WITH TAKE OFF FLAPS

READING NUMBERS = 110 111 112

CONFIGURATION NC = 212

SPEED = 3628. RPM

TEMPERATURE = 66.0 F

RELATIVE HUMIDITY = 57.0 PC

## *SIDELINE PLANE*

BCOM MICROPHONES - LCSSLESS DATA

MIC # 14 15 16 17

R 0. 31. 43. 55.

THETA,  $\theta_s$  90. 90. 90. 90.

Z 106. 91. 86. 81.

DISTANCE 91. 82. 93. 86.

PHI,  $\phi$  0. 22. 31. 39.

INDEX FREQ

1	50.	94.8	99.9	104.5	103.5
2	63.	95.5	97.4	101.3	100.7
3	80.	97.5	99.3	102.0	101.2
4	100.	97.0	96.6	99.7	100.2
5	125.	99.2	98.1	100.0	100.5
6	160.	96.3	96.9	99.7	99.4
7	200.	96.8	96.8	99.2	100.0
8	250.	96.0	97.4	99.2	98.7
9	315.	94.5	96.5	98.9	98.9
10	400.	95.2	96.1	97.4	97.6
11	500.	94.7	94.8	96.9	96.9
12	630.	92.6	93.7	95.4	95.6
13	800.	93.1	92.9	94.6	94.8
14	1000.	92.4	91.7	93.5	93.5
15	1250.	91.1	90.6	92.7	91.8
16	1600.	89.8	90.8	91.0	91.1
17	2000.	88.6	88.5	89.3	89.3
18	2500.	87.3	86.4	87.7	88.2
19	3150.	87.5	84.9	87.0	87.3
20	4000.	88.2	84.2	86.0	86.7
21	5000.	87.5	83.0	85.0	85.5
22	6300.	87.7	81.8	84.8	85.5
23	8000.	86.0	78.7	82.7	83.1
24	10000.	84.8	75.1	81.5	81.3
25	12500.	83.7	70.6	77.0	78.9
26	16000.	82.1	67.8	78.2	75.1
27	20000.	78.2	71.8	82.0	72.3

CASPL 107.8 108.6 111.4 111.1

FOLDOUT FRAME

NE

FLAPS

1 112

SPEED = 3628. RPM

PERCENT SPEED 95.0

FGK 20541

RELATIVE HUMIDITY = 57.0 PC

BAROMETER = 29.54 IN HG

KM 788

DATA

90

55.37

FOLDOUT FRAME 2

DATA OF 615. SUBSET NO. 37. READINGS 110 111 112

QCSEE OTW ENGINE  
BULK-ABSORBER INLET  
FULLY SUPPRESSED ENGINE  
ENGINE WITH TAKE OFF FLAPS

SPL LOSSLESS ARRAY

FLYOVER PLANE DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERIC POWER AND DIRECTIVITY COMPUTED

ENGINE CENTERLINE MICROPHONES

ANGLE  $\theta_F$  60. 90. 120.

COMPUTED CASPL 114.9 115.6 119.4

BAND FREQUENCY

1	50	109.4	109.9	113.4
2	63	106.7	109.4	112.9
3	80	106.4	106.7	110.2
4	100	104.0	104.9	107.5
5	125	105.0	103.2	106.7
6	160	100.9	100.7	104.2
7	200	100.1	98.6	104.6
8	250	97.7	98.1	106.1
9	315	99.1	99.8	106.6
10	400	99.5	100.1	105.5
11	500	98.3	99.5	102.8
12	630	96.5	97.7	101.0
13	800	96.7	96.9	101.0
14	1000	94.7	95.4	98.9
15	1250	93.1	93.8	97.1
16	1600	92.4	92.0	95.7
17	2000	90.5	91.8	94.5
18	2500	88.1	90.1	93.4
19	3150	87.0	88.5	90.8
20	4000	85.7	88.0	88.2
21	5000	83.3	87.6	88.6
22	6300	83.0	84.1	89.0
23	8000	81.0	83.5	84.4
24	10000	81.7	81.6	82.4
25	12500	85.0	85.0	85.0
26	16000	89.8	89.8	89.8
27	20000	96.5	96.5	96.5

ORIGINAL PAGE IS  
OF POOR QUALITY

FOLDOUT FRAME /

111 112

CONFIGURATION NO 212  
SPEED = 3628. RPM  
PERCENT SPEED = 95.0

L C S S L E S S A R R A Y

00.0 FT RADIUS WITH NO ATMOSPHERIC ATTENUATION  
(POWER AND DIRECTIVITY COMPUTATIONS)

WBS

ORIGINAL PAGE IS  
OF POOR QUALITY

91

FOLDOUT FRAME

2

DATA CF 615. SUPSET NO. 37. READINGS 110 111 112

SIX DECIBELS HAVE BEEN SUBTRACTED FROM THE ORIGINAL DATA.  
QCSEE OTW ENGINE  
BULK-AESORER INLET  
FULLY SUPPRESSED ENGINE  
ENGINE WITH TAKE OFF FLAPS

SPL LOSSLESS ARRAY

FLYOVER PLANE

DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERE  
(FOR POWER AND DIRECTIVITY COMPUTATION)

ANGLE,  $\theta$  0. 30. 40. 50. 60. 70. 80. 90. 100. 110. 120.

COMPUTED CASPL 106.9 109.7 109.2 109.1 109.6 110.3 111.1 112.2 113.7 115.6 117.

BAND FREQUENCY

1	50	97.8	103.2	103.2	103.5	103.3	102.8	102.8	104.7	106.2	107.7	109.2
2	63	99.5	103.7	103.2	100.8	99.7	102.2	103.7	105.2	104.8	106.0	108.2
3	80	99.2	101.3	99.8	97.5	100.3	101.5	102.7	104.0	104.2	107.0	107.2
4	100	98.3	99.5	96.0	97.8	99.0	99.0	100.2	101.0	102.5	105.7	106.2
5	125	97.2	96.2	96.5	97.9	98.5	99.0	99.4	100.9	104.0	105.7	107.2
6	160	95.2	95.5	96.5	97.9	97.5	99.2	99.2	99.4	101.9	103.4	106.2
7	200	95.0	96.7	97.0	97.2	97.9	98.9	99.0	100.0	101.7	103.2	106.2
8	250	91.4	94.9	94.7	95.4	95.6	95.7	97.4	97.9	100.1	103.9	105.2
9	315	90.2	93.7	93.7	95.1	96.4	97.2	97.4	97.7	100.1	103.1	103.2
10	400	89.1	92.9	91.9	93.8	96.4	96.6	96.4	98.3	100.4	101.8	103.2
11	500	89.5	91.3	91.1	93.1	92.8	94.3	95.1	94.6	97.3	100.3	100.2
12	630	87.2	89.8	91.5	91.5	93.3	92.5	92.2	94.3	97.2	99.0	98.2
13	800	85.4	89.2	89.9	91.0	91.5	92.2	94.2	93.7	96.2	97.5	98.2
14	1000	84.1	87.2	88.7	89.9	90.2	91.6	92.9	93.2	95.4	96.2	96.2
15	1250	83.8	86.3	86.8	87.3	88.6	89.8	91.3	91.9	94.3	95.1	95.2
16	1600	86.0	86.3	86.0	87.0	87.7	89.7	89.8	90.7	93.0	94.8	94.2
17	2000	82.4	83.8	83.9	84.9	86.4	87.8	88.4	89.6	92.1	92.9	92.2
18	2500	80.4	81.9	82.6	82.6	84.9	85.8	87.1	88.4	90.4	91.4	90.2
19	3150	82.2	82.2	81.7	81.7	83.8	85.0	86.2	87.1	89.5	89.8	88.2
20	4000	79.8	80.8	80.5	80.8	82.8	84.3	84.8	85.8	88.2	88.3	87.2
21	5000	79.4	79.7	79.7	79.8	81.6	82.9	83.9	84.4	86.6	86.7	85.2
22	6300	78.1	78.8	78.6	79.3	80.3	81.9	83.1	83.6	85.3	85.6	84.2
23	8000	74.7	75.9	75.6	76.1	77.3	78.6	80.1	80.6	82.9	82.8	81.2
24	10000	73.3	75.7	75.7	75.7	75.9	76.7	78.2	78.5	81.1	81.5	80.2
25	12500	69.9	79.0	79.0	79.0	79.0	78.9	78.8	78.8	79.0	79.8	78.2
26	16000	73.6	83.7	83.7	83.7	83.7	83.7	83.7	83.7	83.7	83.7	83.2
27	20000	80.5	90.5	90.5	90.5	90.5	90.5	90.5	90.5	90.5	90.5	90.2

92

FOLDOUT FRAME

111 112

ATED FROM THE ORIGINAL DATA.

CONFIGURATION NO 212  
SPEED = 3628. RPM  
PERCENT SPEED = 95.0

L C S S L E S S A R R A Y

0 FT RADIUS WITH NO ATMOSPHERIC ATTENUATION  
POWER AND DIRECTIVITY COMPUTATIONS)

. 80. 90. 100. 110. 120. 130. 180.

3 111.1 112.2 113.7 115.6 117.1 115.9 121.6

8	102.8	104.7	106.2	107.7	109.5	109.2	115.3
2	103.7	105.2	104.8	106.0	108.0	109.0	115.3
5	102.7	104.0	104.2	107.0	107.3	108.3	113.3
0	100.2	101.0	102.5	105.7	106.3	106.0	111.7
0	99.4	100.9	104.0	105.7	107.5	104.9	110.5
2	99.2	99.4	101.9	103.4	106.0	102.0	109.0
9	99.0	100.0	101.7	103.2	106.9	102.2	107.7
7	97.4	97.9	100.1	103.9	105.2	100.9	105.2
2	97.4	97.7	100.1	103.1	103.6	101.1	104.6
6	96.4	98.3	100.4	101.8	103.6	100.3	101.6
3	95.1	94.6	97.3	100.3	100.3	98.1	100.5
5	92.2	94.3	97.2	99.0	98.3	95.7	98.3
2	94.2	93.7	96.2	97.5	98.9	95.9	97.4
6	92.9	93.2	95.4	96.2	96.7	93.2	96.2
8	91.3	91.9	94.3	95.1	95.3	91.8	95.4
7	89.8	90.7	93.0	94.8	94.2	90.3	94.2
8	88.4	89.6	92.1	92.9	92.1	89.1	93.8
8	87.1	88.4	90.4	91.4	90.1	86.7	92.1
0	86.2	87.1	89.5	89.8	88.6	85.5	91.0
3	84.8	85.8	88.2	88.3	87.0	84.2	90.0
9	83.9	84.4	86.6	86.7	85.6	83.8	88.9
9	83.1	83.6	85.3	85.6	84.6	83.1	88.5
6	80.1	80.6	82.9	82.8	81.8	81.4	86.8
7	78.2	78.5	81.1	81.5	80.8	79.5	85.8
9	78.8	78.8	79.0	79.8	78.9	78.8	89.0
7	83.7	83.7	83.7	83.7	83.7	83.7	93.7
5	90.5	90.5	90.5	90.5	90.5	90.5	100.5

92

FOLDOUT FRAME

FOLDOUT FRAME

2

5PL LOSSLESS DATA AT 100 FEET RADIUS

QCSEE CTW ENGINE

BULK-ABSORBER INLET

ORIGINAL PAGE IS  
OF POOR QUALITY

FULLY SUPPRESSED ENGINE

ENGINE WITH TAKE OFF FLAPS

READING NUMBERS = 113 114 115

CONFIGURATION NC = 212

SPEED = 3438. RPM

TEMPERATURE = 66.0 F

RELATIVE HUMIDITY = 55.0 PC

SIDELINE PLANE

ROOM MICROPHONES - LOSSLESS DATA

MIC # 14 15 16 17

R 0. 31. 43. 55.

THETA,  $\theta$  90. 90. 90. 90.

Z 106. 91. 86. 81.

DISTANCE 91. 82. 83. 86.

PHI,  $\phi$  0. 22. 31. 39.

INDEX FREQ

1	50.	92.5	96.9	102.3	99.9
2	63.	94.0	96.1	101.2	99.0
3	80.	95.8	97.3	101.2	98.0
4	100.	95.5	95.1	98.4	98.2
5	125.	96.8	96.8	98.2	99.2
6	160.	94.8	95.6	98.2	98.2
7	200.	95.8	95.8	97.2	98.2
8	250.	94.3	96.3	97.0	97.2
9	315.	93.2	95.5	96.9	97.6
10	400.	92.9	93.6	95.9	96.6
11	500.	92.5	93.0	94.9	94.8
12	630.	90.4	92.3	93.6	93.4
13	800.	90.9	91.0	92.4	92.3
14	1000.	90.6	89.9	91.3	91.5
15	1250.	99.8	89.1	90.3	90.2
16	1600.	92.2	88.6	93.2	91.4
17	2000.	86.9	86.0	87.3	87.6
18	2500.	86.3	85.2	86.2	86.7
19	3150.	87.5	85.4	86.3	87.0
20	4000.	87.5	83.7	85.4	85.9
21	5000.	86.6	82.7	84.5	85.2
22	6300.	86.6	81.7	84.5	85.1
23	8000.	85.0	79.1	82.8	83.0
24	10000.	83.8	75.2	81.6	81.8
25	12500.	83.2	70.6	76.8	78.8
26	16000.	81.2	68.0	78.4	75.3
27	20000.	77.3	72.0	82.2	72.7

OASPL

106.2 106.9 109.9 109.1

FOLDOUT FRAME /

ORIGINAL PAGE IS  
OF POOR QUALITY

NE

FLAPS

4 115

SPEED = 3438. RPM

PERCENT SPEED 90.0

FGK 18232

RELATIVE HUMIDITY = 55.0 PC

BAROMETER = 29.54 IN HG

XMU .697

DATA

93

5.5, 38

FOLDOUT FRAME 2

FRAME 1



DATA OF 615. SUBSET NO. 38. READINGS 113 114 115

QCSEE OTW ENGINE  
BULK-ABSORBER INLET  
FULLY SUPPRESSED ENGINE  
ENGINE WITH TAKE OFF FLAPS

SPL LOSSLESS ARRAY

FLYOVER PLANE DATA AT 100.0 FT RADIUS WITH NO ATMOSP  
(FOR POWER AND DIRECTIVITY COMPU

ENGINE CENTERLINE MICROPHONES

ANGLE  $\theta_F$  60. 90. 120.

COMPUTED CASPL 113.7 113.7 117.0

BAND FREQUENCY

1	50	107.5	108.4	110.9
2	63	104.7	106.9	110.0
3	80	104.5	105.4	107.9
4	100	103.0	101.7	105.2
5	125	103.9	101.5	104.4
6	160	101.9	99.2	101.7
7	200	99.7	96.4	103.1
8	250	97.2	96.2	103.9
9	315	97.9	97.6	104.3
10	400	97.8	98.6	103.3
11	500	95.8	96.6	100.6
12	630	93.3	94.8	98.2
13	800	93.7	94.2	99.0
14	1000	92.6	93.2	97.1
15	1250	92.3	91.3	95.1
16	1600	97.7	90.7	94.0
17	2000	90.5	89.0	92.0
18	2500	90.1	88.0	91.1
19	3150	92.9	87.9	89.2
20	4000	90.1	87.2	86.1
21	5000	88.8	87.1	87.2
22	6300	88.2	84.2	87.4
23	8000	86.9	83.3	82.9
24	10000	82.5	81.8	81.8
25	12500	85.2	85.3	85.3
26	16000	90.2	90.2	90.2
27	20000	97.0	97.0	97.0

94

FOLDOUT FRAME 1

114 115

CONFIGURATION NO 212  
SPEED = 3438. RPM  
PERCENT SPEED = 90.0

LOSSLESS ARRAY

0.0 FT RADIUS WITH NO ATMOSPHERIC ATTENUATION  
(POWER AND DIRECTIVITY COMPUTATIONS)

94

FOLDOUT FRAME 2

DATA CF 615. SUBSET NO. 38. READINGS 113 114 115

SIX DECIBELS HAVE BEEN SUBTRACTED FROM THE ORIGINAL DATA  
 GCSEE CTW ENGINE  
 BULK-ABSORBER INLET  
 FULLY SUPPRESSED ENGINE  
 ENGINE WITH TAKE OFF FLAPS

ORIGINAL PAGE IS  
 OF POOR QUALITY

*FLYOVER PLANE*

*SPL* LOSSLESS ARRAY

DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERIC  
 (FOR POWER AND DIRECTIVITY COMPUTATIONS)

ANGLE, $\theta$		0.	30.	40.	50.	60.	70.	80.	90.	100.	110.
COMPUTED CASPL		106.9	109.3	108.4	108.0	108.6	108.4	109.4	110.0	111.9	113.5
RANG FREQUENCY											
1	50	96.5	103.0	103.7	100.8	101.7	100.2	101.2	103.0	105.3	106.5
2	63	97.0	102.0	100.2	100.8	98.0	98.0	101.5	102.2	103.2	105.5
3	80	98.2	100.7	96.7	96.7	98.2	99.2	100.8	100.8	102.5	104.0
4	100	98.3	95.3	94.2	95.0	98.2	97.7	98.3	99.0	101.5	102.3
5	125	96.5	95.7	95.9	96.0	98.5	97.9	98.7	98.2	101.0	103.9
6	160	95.0	94.0	95.2	96.5	96.9	96.9	97.2	97.2	98.9	101.0
7	200	93.5	95.4	95.7	96.2	96.0	97.5	97.7	98.0	99.4	100.4
8	250	90.6	93.6	92.6	93.9	94.2	93.4	95.7	97.1	97.9	101.1
9	315	89.7	92.1	91.7	92.9	95.2	95.6	95.2	95.7	97.6	100.4
10	400	87.8	90.3	90.4	92.1	95.1	94.4	94.8	96.1	97.8	99.1
11	500	86.5	89.0	89.3	91.6	90.8	92.5	92.6	92.8	95.1	97.3
12	630	84.5	87.0	89.0	89.2	90.2	90.2	89.5	92.0	95.2	96.5
13	800	83.4	87.4	87.9	88.5	89.9	89.9	91.5	91.0	94.4	95.4
14	1000	86.1	86.7	87.2	87.9	88.9	89.4	90.4	90.4	93.1	93.6
15	1250	90.1	89.8	88.6	87.4	88.1	88.6	89.4	89.1	92.1	92.8
16	1600	95.8	95.7	94.8	93.2	93.5	95.0	92.7	89.7	91.9	92.0
17	2000	88.1	88.1	86.9	86.1	86.8	87.1	86.9	86.4	89.1	89.8
18	2500	89.4	90.0	87.6	86.8	86.9	87.1	85.9	86.1	88.4	88.3
19	3150	93.0	94.8	91.7	90.5	91.5	89.8	87.3	86.7	88.2	87.5
20	4000	90.0	91.2	88.4	87.9	87.9	86.7	85.2	84.2	86.0	86.0
21	5000	90.5	92.0	88.6	88.5	88.0	86.6	85.0	83.8	85.1	84.8
22	6300	89.0	91.0	87.5	87.5	86.7	86.0	83.8	82.7	84.0	84.0
23	8000	85.4	87.9	84.0	84.9	84.1	82.9	80.9	79.7	81.4	81.0
24	10000	85.4	86.6	82.5	82.8	82.6	80.8	79.4	77.9	79.8	79.7
25	12500	81.6	83.7	80.7	80.0	80.1	79.0	79.1	79.2	79.0	79.1
26	16000	79.8	83.7	84.0	84.0	84.0	84.1	84.1	84.1	84.1	84.1
27	20000	79.8	91.0	91.0	91.0	91.0	91.0	91.0	91.0	91.0	91.0

95

FOLDOUT FRAME 1

CTED FROM THE ORIGINAL DATA.

CONFIGURATION NO 212  
SPEED = 3439. RPM  
PERCENT SPEED = 90.0

L C S S L E S S A R R A Y

ORIGINAL PAGE IS  
OF POOR QUALITY

.0 FT RADIUS WITH NO ATMOSPHERIC ATTENUATION  
POWER AND DIRECTIVITY COMPUTATIONS)

0.	80.	90.	100.	110.	120.	130.	180.
.4	109.4	110.0	111.9	113.5	114.4	113.8	118.9
.2	101.2	103.0	105.3	106.5	106.7	107.0	111.5
.0	101.5	102.2	103.2	105.5	106.2	107.7	112.2
.2	100.8	100.8	102.5	104.0	104.7	105.2	111.7
.7	98.3	99.0	101.5	102.3	103.3	102.8	109.8
.9	98.7	98.2	101.0	103.9	104.2	102.9	108.4
.9	97.2	97.2	98.9	101.0	103.0	101.0	106.4
.5	97.7	98.0	99.4	100.4	103.5	100.4	105.4
.4	95.7	97.1	97.9	101.1	102.6	98.6	103.4
.6	95.2	95.7	97.6	100.4	101.2	98.2	101.6
.4	94.8	96.1	97.8	99.1	101.3	97.9	98.9
.5	92.6	92.8	95.1	97.3	98.1	95.3	97.3
.2	89.5	92.0	95.2	96.5	96.5	93.3	95.7
.9	91.5	91.0	94.4	95.4	96.2	93.4	94.9
.4	90.4	90.4	93.1	93.6	94.4	91.6	94.1
.6	89.4	89.1	92.1	92.8	92.8	90.1	92.6
.0	92.7	89.7	91.9	92.0	92.7	90.5	92.0
.1	86.9	86.4	89.1	89.8	89.8	86.4	90.8
.1	85.9	86.1	88.4	88.3	87.9	85.3	89.1
.8	87.3	86.7	88.2	87.5	86.2	84.2	88.3
.7	85.2	84.2	86.0	86.0	85.0	83.4	87.2
.6	85.0	83.8	85.1	84.8	83.6	82.3	86.1
.0	83.8	82.7	84.0	84.0	83.0	82.6	85.9
.9	80.9	79.7	81.4	81.0	80.9	81.2	84.0
.8	79.4	77.9	79.8	79.7	79.4	79.0	86.3
.0	79.1	79.2	79.0	79.1	79.1	79.1	89.3
.1	84.1	84.1	84.1	84.1	84.1	84.1	94.1
.0	91.0	91.0	91.0	91.0	91.0	91.0	101.0

*SPL* LOSSLESS DATA AT 100 FEET RADIALS

QCSSE CTW ENGINE

BULK-ABSORBER INLET

FULLY SUPPRESSED ENGINE

ORIGINAL PAGE IS  
OF POOR QUALITY

ENGINE WITH TAKE OFF FLAPS

READING NUMBERS = 116 117 118

CONFIGURATION NC = 212

SPEED = 3285. RPM

TEMPERATURE = 67.0 F

RELATIVE HUMIDITY = 60.0 PC

*SIDELINE PLANE*

BOOM MICROPHONES - LOSSLESS DATA

MIC #	14	15	16	17
R	0.	31.	43.	55.
THETA, $\theta_s$	90.	90.	90.	90.
Z	106.	91.	86.	81.
DISTANCE	91.	82.	83.	86.
PHI, $\phi$	0.	22.	31.	39.

INDEX	FREQ				
1	50.	93.3	96.2	101.8	98.9
2	63.	94.3	94.8	99.7	98.0
3	80.	94.1	94.9	98.4	95.9
4	100.	92.6	94.1	96.5	96.2
5	125.	95.6	94.8	97.5	97.4
6	160.	93.5	93.9	97.0	96.2
7	200.	93.8	93.4	95.9	96.7
8	250.	93.5	94.3	96.2	97.2
9	315.	91.2	93.6	95.7	96.1
10	400.	91.5	92.0	94.4	94.2
11	500.	90.7	91.3	93.1	93.3
12	630.	89.2	89.8	91.9	91.6
13	800.	89.6	88.9	90.6	90.1
14	1000.	88.6	87.7	89.5	89.5
15	1250.	88.0	87.2	88.3	88.5
16	1600.	88.7	87.6	89.4	87.9
17	2000.	85.1	84.2	85.3	85.6
18	2500.	85.0	83.6	84.8	85.7
19	3150.	87.1	85.4	86.8	87.6
20	4000.	85.8	82.5	84.1	84.5
21	5000.	85.8	81.8	84.1	85.2
22	6300.	85.5	81.3	83.9	84.8
23	8000.	83.9	78.3	82.4	82.7
24	10000.	82.6	74.9	81.3	81.1
25	12500.	81.3	70.2	76.5	78.0
26	16000.	79.7	67.4	77.7	74.8
27	20000.	75.6	71.2	81.4	72.8

OASPL 104.9 105.2 108.5 107.6

FOLDOUT FRAME

ORIGINAL PAGE IS  
OF POOR QUALITY

E

LAPS

118

SPEED = 3285. RPM

PERCENT SPEED 86.0

FGK 16426

ATIVE HUMIDITY = 60.0 PC

BAROMETER = 29.53 IN HG

XMH .636

DATA

S.S. 39

96

FOLDOUT FRAME

2

DATA OF 615. SUBSET NO. 39. READINGS 116 117 118

QCSEE CTW ENGINE  
PULK-ABSORBER INLET  
FULLY SUPPRESSED ENGINE  
ENGINE WITH TAKE OFF FLAPS

SPL LOSSLESS AREA

FLYOVER PLANE DATA AT 100.0 FT RADIUS WITH NO ATMOSP  
(FOR POWER AND DIRECTIVITY COMPU

ENGINE CENTERLINE MICROPHONES

ANGLE,  $\theta$ , 60. 90. 120.

COMPUTED CASPL 113.2 111.9 114.8

BAND FREQUENCY

1	50	108.0	106.5	108.9
2	63	104.7	104.4	107.5
3	80	104.5	103.7	105.2
4	100	100.7	101.0	103.0
5	125	103.4	99.4	102.4
6	160	99.9	98.0	99.4
7	200	96.9	94.6	101.6
8	250	96.9	95.1	102.1
9	315	95.9	96.4	101.8
10	400	96.0	96.6	100.8
11	500	95.3	94.8	99.1
12	630	92.0	92.8	96.5
13	800	91.9	92.2	96.7
14	1000	90.8	91.6	94.6
15	1250	90.3	89.5	92.8
16	1600	95.0	89.4	91.7
17	2000	89.3	87.0	89.8
18	2500	91.6	86.8	89.1
19	3150	95.8	87.3	87.6
20	4000	90.8	86.2	84.1
21	5000	91.5	87.5	85.0
22	6300	90.8	84.3	85.5
23	8000	89.5	83.6	81.2
24	10000	84.2	81.2	81.3
25	12500	84.6	84.4	84.4
26	16000	88.9	89.0	89.0
27	20000	95.5	95.5	95.5

97

FOLDOUT FRAME

117 118

CONFIGURATION NO 212  
SPEED = 3285. RPM  
PERCENT SPEED = 86.0

2 LOSSLESS ARRAY

0.0 FT RADIUS WITH NO ATMOSPHERIC ATTENUATION  
(POWER AND DIRECTIVITY COMPUTATIONS)

65

97

FOLDOUT FRAME 2



DATA OF 615. SURSET MC. 39. READINGS 116 117 118

SIX DECIBELS HAVE BEEN SUBTRACTED FROM THE ORIGINAL DATA  
COSEE CTW ENGINE  
BULK-ABSORBER INLET  
FULLY SUPPRESSED ENGINE  
ENGINE WITH TAKE OFF FLAPS

SPL LOSSLESS ARR

FLYOVER PLANE DATA AT 100.0 FT RADIUS WITH NO ATMOSP  
(FOR POWER AND DIRECTIVITY COMPI

ANGLE OF 0. 30. 40. 50. 60. 70. 80. 90. 100. 110.

COMPUTED CASPL 106.9 108.0 107.7 107.6 107.5 107.4 107.8 108.3 109.9 111.0

BAND FREQUENCY

1	50	94.3	98.8	102.0	100.5	100.5	98.3	100.2	101.5	103.0	103.5
2	63	95.3	98.2	99.8	98.5	98.8	97.0	100.3	100.0	102.2	102.0
3	80	97.3	99.3	96.0	96.7	97.2	97.3	98.0	99.5	99.7	101.8
4	100	96.3	99.5	92.0	94.7	96.5	96.7	97.2	97.0	99.0	100.7
5	125	94.7	95.2	93.5	95.8	97.8	96.3	95.8	96.5	98.8	100.3
6	160	94.2	93.7	94.2	94.5	94.7	95.9	96.0	96.0	97.7	98.7
7	200	92.0	94.5	94.7	94.2	94.5	96.4	96.2	97.2	98.5	99.0
8	250	90.1	92.6	91.7	92.7	92.7	94.1	93.9	94.9	96.4	99.4
9	315	88.2	90.4	90.2	91.9	93.1	94.4	94.6	93.9	95.7	98.4
10	400	86.4	88.9	88.3	90.4	93.6	93.4	92.9	94.3	95.4	97.1
11	500	85.8	87.5	87.5	90.5	89.1	91.1	90.6	90.8	92.6	95.5
12	630	84.2	85.5	86.5	87.0	88.8	88.0	87.7	90.0	92.2	94.0
13	800	84.0	85.9	86.0	87.4	88.2	88.4	89.4	89.2	91.4	92.7
14	1000	84.4	86.2	86.1	86.7	87.6	88.1	88.6	88.2	90.6	91.2
15	1250	89.1	88.1	87.3	87.3	87.1	87.3	87.3	87.3	89.3	90.3
16	1600	96.7	94.8	94.3	94.7	91.5	94.8	87.2	88.8	90.3	90.5
17	2000	89.8	87.9	87.9	86.4	86.8	85.4	84.6	84.8	86.8	87.4
18	2500	94.3	92.4	91.1	90.6	89.3	87.1	85.8	84.4	85.6	86.4
19	3150	97.6	97.1	95.8	95.3	94.1	92.3	88.1	86.3	86.5	85.8
20	4000	91.8	90.6	89.9	90.3	89.6	87.3	85.5	83.1	84.0	83.6
21	5000	93.2	92.5	91.3	92.0	91.7	88.8	86.3	83.7	83.8	83.0
22	6300	92.0	91.3	89.9	90.9	89.8	87.4	85.1	82.8	82.3	81.9
23	8000	89.9	88.5	86.8	88.2	87.2	84.5	82.7	79.8	79.7	78.8
24	10000	88.4	86.7	85.2	85.5	85.6	82.4	81.1	77.8	77.8	77.2
25	12500	84.7	83.6	82.1	82.2	82.6	78.4	78.3	78.3	78.3	78.3
26	16000	82.8	83.0	83.3	82.6	82.6	82.9	82.9	82.9	82.9	82.5
27	20000	80.8	89.4	89.4	89.5	89.5	89.5	89.5	89.5	89.5	89.5

C-3

98

FOLDOUT FRAME

CTED FROM THE ORIGINAL DATA.

CONFIGURATION NO 212

SPEED = 3285. RPM

PERCENT SPEED = 86.0

# LOSSLESS ARRAY

0.0 FT RADIUS WITH NO ATMOSPHERIC ATTENUATION  
(POWER AND DIRECTIVITY COMPUTATIONS)

0. 80. 90. 100. 110. 120. 130. 180.

.4 107.8 108.3 109.9 111.0 112.8 111.9 116.9

.3 100.2 101.5 103.0 103.5 105.7 105.3 110.5

.0 100.3 100.0 102.2 102.0 103.3 104.5 110.7

.3 98.0 99.5 99.7 101.8 103.2 102.7 108.3

.7 97.2 97.0 99.0 100.7 102.2 101.3 106.8

.3 95.8 96.5 98.8 100.3 102.2 102.2 106.2

.9 96.0 96.0 97.7 98.7 101.5 99.2 104.5

.4 96.2 97.2 98.5 99.0 102.4 99.4 103.2

.1 93.9 94.9 96.4 99.4 100.6 97.7 101.1

.4 94.6 93.9 95.7 98.4 99.1 97.7 99.1

.4 92.9 94.3 95.4 97.1 99.6 96.6 96.3

.1 90.6 90.8 92.6 95.5 96.1 94.1 95.1

.0 87.7 90.0 92.2 94.0 94.3 92.0 92.8

.4 89.4 89.2 91.4 92.7 94.7 92.2 92.5

.1 88.6 88.2 90.6 91.2 92.7 89.6 91.6

.3 87.3 87.3 89.3 90.3 91.3 88.8 90.3

.8 87.2 88.8 90.3 90.5 91.5 91.2 89.3

.4 84.6 84.8 86.8 87.4 87.8 84.9 88.4

.1 85.8 84.4 85.6 86.4 86.4 83.6 86.7

.3 88.1 86.3 86.5 85.8 84.8 82.8 95.8

.3 85.5 83.1 84.0 83.6 83.5 81.1 95.0

.8 86.3 83.7 83.8 83.0 82.3 81.0 93.8

.4 85.1 82.8 82.3 81.9 81.8 81.3 83.5

.5 82.7 79.8 79.7 78.8 79.2 79.5 83.6

.4 81.1 77.8 77.8 77.2 77.7 77.1 85.3

.4 78.3 78.3 78.3 78.3 78.3 78.3 88.4

.9 82.9 82.9 82.9 82.9 82.9 82.9 92.9

.5 89.5 89.5 89.5 89.5 89.5 89.5 99.5

SPL

## LOSSLESS DATA AT 100 FOOT RADIUS

QCSEE OTW ENGINE

BULK-ABSORBER INLET

3000 FT. RUNWAY CONF.

ENGINE WITH TAKE OFF FLAPS

READING NUMBERS = 2 3 4

CONFIGURATION NO = 203

SPEED = 3124. RPM

TEMPERATURE = 78.0 F

RELATIVE HUMIDITY = 66.0 PC

SIDELINE PLANE

BOOM MICROPHONES - LOSSLESS DATA

MIC # 14 15 16 17 18

R 0. 31. 43. 54. 35.

THETA,  $\theta_s$  90. 90. 90. 90. ~~90.~~ 120

Z 106. 91. 86. 81. 65.

DISTANCE 91. 82. 83. 86. 61.

PHI,  $\phi$  0. 22. 31. 39. 35.

INDEX FREQ

1	25.	88.5	90.6	89.3	92.0	89.2
2	32.	89.8	93.8	93.3	94.2	92.0
3	40.	90.1	93.1	93.8	95.7	93.7
4	50.	92.1	95.6	95.8	96.5	94.5
5	63.	91.5	94.3	94.5	95.5	95.4
6	80.	91.1	95.4	94.2	94.8	94.7
7	100.	92.0	93.1	92.9	94.3	93.0
8	125.	92.8	92.8	93.5	95.7	94.0
9	160.	90.5	92.4	91.5	93.8	92.6
10	200.	91.5	93.3	92.9	94.3	93.1
11	250.	91.5	93.4	93.7	94.5	93.2
12	315.	89.7	91.8	91.5	93.0	91.9
13	400.	89.5	90.3	90.4	90.9	90.1
14	500.	88.9	89.7	89.1	90.6	88.8
15	630.	87.3	87.5	87.3	88.4	87.6
16	800.	87.6	87.2	87.1	87.8	87.3
17	1000.	86.2	85.9	85.8	86.7	86.2
18	1250.	86.9	86.0	85.7	86.4	86.0
19	1600.	88.6	86.0	86.1	86.4	85.4
20	2000.	83.0	82.4	82.5	83.1	82.3
21	2500.	84.0	82.3	83.0	83.5	81.6
22	3150.	85.8	84.4	85.1	84.9	81.5
23	4000.	85.1	81.7	82.6	82.6	81.5
24	5000.	84.7	80.0	81.8	82.1	81.3
25	6300.	85.7	79.8	82.6	82.6	82.5
26	8000.	83.9	78.2	81.3	81.2	80.6
27	10000.	85.1	75.8	80.6	80.5	77.5
28	12500.	84.8	73.9	78.1	78.5	75.7
29	16000.	84.5	75.8	76.8	76.6	74.1

OASPL

103.6 105.1 105.0 106.2 105.0

FOLDOUT FRAME /

4  
SPEED = 3124. RPM

PERCENT SPEED 81.0

FGK 13445

WIND HUMIDITY = 66.0 PC

BAROMETER = 29.21 IN HG

XMH .545

99

53.40

FOLDOUT FRAME 2

DATA OF 829. SURSET NO. 40. READINGS 2 3 4

QCSEE OTW ENGINE  
BULK-ABSORBER INLET  
3000 FT. RUNWAY CONF.  
ENGINE WITH TAKE OFF FLAPS

*SPL* LOSSLESS ARRAY

*FLYOVER PLANE* DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERE  
(FOR POWER AND DIRECTIVITY COMPUTATION)

*ENGINE CENTERLINE MICROPHONES*

ANGLE OF 60. 90.

COMPUTED GASPL 112.3 112.9

BAND FREQUENCY

1	25	101.7	102.7
2	32	105.5	105.4
3	40	105.9	104.7
4	50	103.7	103.7
5	63	101.2	104.4
6	80	99.5	102.4
7	100	97.2	99.7
8	125	97.2	99.2
9	160	93.9	95.5
10	200	92.7	93.7
11	250	92.4	94.9
12	315	92.8	95.8
13	400	92.4	94.6
14	500	90.5	92.8
15	630	88.4	92.2
16	800	89.4	91.3
17	1000	88.8	90.7
18	1250	88.2	89.1
19	1600	89.5	88.8
20	2000	86.7	86.2
21	2500	90.3	87.0
22	3150	93.5	87.5
23	4000	91.6	84.6
24	5000	92.4	85.8
25	6300	91.7	87.2
26	8000	89.3	82.4
27	10000	89.5	82.3
28	12500	85.9	80.2
29	16000	84.6	77.5

100

FOLDOUT FRAME /

3 4  
CONFIGURATION NO 203  
SPEED = 3124. RPM  
PERCENT SPEED = 81.0

LOSSLESS ARRAY

FT RADIUS WITH NO ATMOSPHERIC ATTENUATION  
POWER AND DIRECTIVITY COMPUTATIONS)

100

FOLDOUT FRAME 2

DATA OF 829. SUBSET NO. 40. READINGS 2 3 4

SIX DECIBELS HAVE BEEN SUBTRACTED FROM THE ORIGINAL DATA.

QCSEE OTW ENGINE

BULK-ABSORBER INLET

3000 FT. RUNWAY CONF.

ENGINE WITH TAKE OFF FLAPS

ORIGINAL PAGE IS  
OF POOR QUALITY

5 PL

LOSSLESS ARRAY

FLYOVER PLANE DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERIC  
(FOR POWER AND DIRECTIVITY COMPUTATION)

ANGLE,  $\theta$ , 0. 30. 40. 50. 60. 70. 80. 90. 100. 110. 120.

COMPUTED QASPL 104.3 106.8 107.1 107.9 107.2 107.7 106.7 107.0 108.4 111.9 110.

BAND FREQUENCY

1	25	85.2	93.2	93.7	95.8	97.5	99.0	97.7	97.5	97.3	101.8	98.0
2	32	88.7	96.0	97.2	99.3	99.5	99.2	98.7	99.7	98.7	105.3	101.0
3	40	89.3	97.0	99.5	99.8	99.5	99.3	96.5	98.0	99.3	100.7	101.0
4	50	92.0	99.0	99.8	99.5	97.0	97.7	97.0	98.0	100.3	103.7	101.0
5	63	92.2	97.0	97.0	97.0	95.0	95.0	96.8	97.2	99.3	102.8	101.0
6	80	93.0	95.3	94.0	94.3	94.3	96.0	96.0	96.0	97.8	99.0	99.0
7	100	94.0	92.5	91.2	92.3	93.5	95.2	93.7	93.3	96.8	98.8	98.0
8	125	93.0	90.0	91.5	94.2	93.3	93.5	94.5	93.3	96.8	99.7	98.0
9	160	90.0	89.7	92.0	92.2	92.2	93.5	92.0	91.7	93.7	97.7	97.0
10	200	89.2	91.7	91.7	92.5	92.0	93.4	92.5	92.4	93.7	97.5	98.0
11	250	85.9	89.7	88.7	90.0	89.5	91.5	91.4	90.9	92.2	95.9	96.0
12	315	85.1	88.7	87.6	89.6	90.1	92.1	90.4	89.6	91.7	94.9	95.0
13	400	82.6	87.1	85.9	88.6	88.8	90.6	89.6	88.8	89.9	93.8	95.0
14	500	81.0	84.5	85.0	87.3	87.8	88.6	86.8	86.0	89.0	92.5	93.0
15	630	80.4	83.2	84.0	85.4	85.4	86.9	85.9	85.4	87.9	91.2	91.0
16	800	82.4	83.6	83.7	85.7	86.2	87.7	86.1	85.1	87.2	90.9	91.0
17	1000	83.6	83.8	83.1	85.1	85.8	86.3	84.6	84.5	86.3	88.8	88.0
18	1250	88.0	88.2	86.5	87.2	86.0	86.5	83.2	83.4	85.2	88.0	87.0
19	1600	93.3	92.4	90.3	91.3	88.4	87.8	84.3	84.3	84.6	87.4	87.0
20	2000	87.9	88.2	86.2	86.0	84.4	84.0	81.5	80.5	82.7	85.4	84.0
21	2500	89.0	90.5	89.7	89.7	86.8	85.5	82.3	80.8	82.8	84.8	84.0
22	3150	93.1	93.5	93.1	94.3	90.6	89.0	85.5	82.0	83.0	84.3	83.0
23	4000	92.0	91.4	90.2	91.2	88.2	87.0	82.9	80.4	81.2	82.2	81.0
24	5000	91.4	90.4	89.4	90.8	87.8	86.6	82.6	79.9	80.4	80.9	80.0
25	6300	90.0	90.5	89.5	90.7	88.2	86.5	82.7	79.7	79.8	80.0	80.0
26	8000	87.9	88.7	88.1	88.5	86.6	84.4	81.2	77.5	77.4	77.6	77.0
27	10000	86.8	88.0	87.5	87.1	84.9	82.8	80.1	75.7	76.1	78.0	76.0
28	12500	84.1	86.1	85.0	84.4	82.4	80.7	77.2	72.3	73.2	76.6	76.0
29	16000	81.9	84.0	82.4	83.1	80.9	79.4	75.2	69.4	69.7	79.7	79.0

101

FOLDOUT FRAME

FROM THE ORIGINAL DATA.

CONFIGURATION NO 203

SPEED = 3124. RPM

PERCENT SPEED = 81.0

D S S L E S S A R R A Y

RADIUS WITH NO ATMOSPHERIC ATTENUATION  
AND DIRECTIVITY COMPUTATIONS)ORIGINAL PAGE IS  
OF POOR QUALITY

80. 90. 100. 110. 120. 130. 180.

6.7 107.0 108.4 111.9 110.7 109.0 111.2

7.7 97.5 97.3 101.8 98.8 99.3 97.2

8.7 99.7 98.7 105.3 101.2 98.7 101.3

6.5 98.0 99.3 100.7 101.5 99.3 103.5

7.0 98.0 100.3 103.7 101.0 100.7 104.5

6.8 97.2 99.3 102.8 101.3 99.3 101.7

6.0 96.0 97.8 99.0 99.8 97.8 101.5

3.7 93.3 96.8 98.8 98.0 97.3 98.7

4.5 93.3 96.8 99.7 98.7 97.2 97.8

2.0 91.7 93.7 97.7 97.9 95.7 96.7

2.5 92.4 93.7 97.5 98.9 95.7 96.7

1.4 90.9 92.2 95.9 96.5 94.0 95.0

0.4 89.6 91.7 94.9 95.9 92.4 93.2

9.6 88.8 89.9 93.8 95.6 92.6 91.4

6.8 86.0 89.0 92.5 93.6 89.3 89.6

5.9 85.4 87.9 91.2 91.7 87.8 87.5

6.1 85.1 87.2 90.9 91.4 87.4 87.6

4.6 84.5 86.3 88.8 88.8 85.1 86.8

3.2 83.4 85.2 88.0 87.7 84.0 86.4

4.3 84.3 84.6 87.4 87.6 84.4 85.6

1.5 80.5 82.7 85.4 84.5 81.0 83.7

2.3 80.8 82.8 84.8 84.0 80.8 83.5

5.5 82.0 83.0 84.3 83.6 81.1 83.3

2.9 80.4 81.2 82.2 81.7 79.2 81.9

2.6 79.9 80.4 80.9 80.6 78.3 81.4

2.7 79.7 79.8 80.0 80.2 78.2 81.2

1.2 77.5 77.4 77.6 77.5 76.4 78.9

0.1 75.7 76.1 78.0 76.6 75.0 79.3

7.2 72.3 73.2 76.6 76.1 76.2 78.3

5.2 69.4 69.7 79.7 79.7 79.7 79.6

101

FOLDOUT FRAME

2



*SPL* LOSSLESS DATA AT 100 FOOT RADIUS

QCSEE OTW ENGINE

BULK-ABSORBER INLET

3000 FT. RUNWAY CONF.

ENGINE WITH TAKE OFF FLAPS

READING NUMBERS = 5 6 7

CONFIGURATION NO = 203

SPEED = 3124. RPM

TEMPERATURE = 79.0 F

RELATIVE HUMIDITY = 67.0 PC

*SIDELINE PLANE* BOOM MICROPHONES - LOSSLESS DATA

MIC #	14	15	16	17	18
R	0.	31.	43.	54.	35.
THETA, $\theta_s$	90.	90.	90.	90.	<del>90.</del> 120
Z	106.	91.	86.	81.	65.
DISTANCE	91.	82.	83.	86.	61.
PHI, $\phi$	0.	22.	31.	39.	35.

INDEX : FREQ

1	25.	88.1	92.9	91.3	91.8	84.2
2	32.	90.0	95.3	96.8	95.7	80.5
3	40.	91.0	93.1	94.0	96.0	82.9
4	50.	93.0	96.1	96.7	97.8	81.0
5	63.	90.5	95.3	93.2	95.5	81.9
6	80.	93.1	95.1	93.2	94.7	76.2
7	100.	92.0	94.3	92.5	94.5	76.4
8	125.	93.0	95.1	93.7	95.8	75.2
9	160.	90.8	92.4	92.4	93.3	74.2
10	200.	91.7	92.9	92.9	94.7	71.2
11	250.	91.2	93.4	93.2	94.3	69.4
12	315.	90.2	92.0	92.0	93.9	66.4
13	400.	89.4	91.6	90.7	91.5	64.2
14	500.	89.6	89.2	89.6	91.1	64.6
15	630.	87.8	87.9	88.3	88.9	63.1
16	800.	88.5	87.7	87.3	88.3	60.6
17	1000.	86.7	86.3	86.7	87.3	60.3
18	1250.	86.2	85.6	85.6	86.2	57.9
19	1600.	87.4	86.7	86.1	86.2	57.9
20	2000.	83.5	82.2	83.1	83.3	57.9
21	2500.	84.0	82.6	83.0	83.7	58.0
22	3150.	87.0	85.7	85.0	86.3	58.0
23	4000.	85.3	82.0	82.3	83.1	58.1
24	5000.	85.8	80.9	82.6	83.0	58.3
25	6300.	86.0	80.3	83.1	83.3	58.5
26	8000.	84.6	78.6	81.6	81.6	58.9
27	10000.	85.1	76.4	81.2	81.1	59.5
28	12500.	85.4	73.8	78.5	79.0	60.4
29	16000.	84.9	75.8	76.9	76.9	61.8

FOLDOUT FRAME 1

102

OASPL

103.9 105.7 105.5 106.6 90.2

S  
7  
SPEED = 3124. RPM

PERCENT SPEED 81.0

FGK

14200

WE HUMIDITY = 67.0 PC

BAROMETER = 29.22 IN HG

XM11

.569

S.S. 41

UT FRAME 1

102

FOLDOUT FRAME

2

DATA OF 829. SURSET NO. 41. READINGS 5 6 7

QCSEE OTW ENGINE  
BULK-ABSORBER INLET  
3000 FT. RUNWAY CONF.  
ENGINE WITH TAKE OFF FLAPS

SPL LOSSLESS ARRAY

FLYOVER PLANE DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERIC  
(FOR POWER AND DIRECTIVITY COMPUTATION)

ENGINE CENTERLINE MICROPHONES

ANGLE,  $\theta$  60. 90.

COMPUTED OASPL 111.7 114.1

BAND FREQUENCY

1	25	101.0	103.5
2	32	103.9	106.0
3	40	105.4	106.5
4	50	103.9	105.7
5	63	99.7	104.9
6	80	98.7	103.7
7	100	97.2	101.2
8	125	97.2	100.9
9	160	93.5	97.4
10	200	91.9	94.4
11	250	91.4	95.2
12	315	92.3	96.6
13	400	92.6	96.1
14	500	90.7	94.7
15	630	89.2	93.7
16	800	89.8	92.4
17	1000	88.2	91.3
18	1250	88.4	89.7
19	1600	90.1	89.1
20	2000	86.7	87.7
21	2500	89.8	88.2
22	3150	94.2	88.8
23	4000	91.6	86.2
24	5000	93.4	87.1
25	6300	91.8	88.3
26	8000	89.1	83.5
27	10000	89.6	84.0
28	12500	86.3	81.8
29	16000	84.6	79.2

103

FOLDOUT FRAME /

7

CONFIGURATION NO 203  
SPEED = 3124. RPM  
PERCENT SPEED = 81.0

O S S L E S S A R R A Y

Y RADIUS WITH NO ATMOSPHERIC ATTENUATION  
ER AND DIRECTIVITY COMPUTATIONS)

103

FOLDOUT FRAME

2

DATA OF 829. SUBSET NO. 41. READINGS 5 6 7

SIX DECIBELS HAVE BEEN SUBTRACTED FROM THE ORIGINAL DATA.

QCSEE OTW ENGINE  
BULK-ABSORBER INLET  
3000 FT. RUNWAY CONF.  
ENGINE WITH TAKE OFF FLAPS

SPL LOSSLESS ARRAY

ORIGINAL PAGE IS  
OF POOR QUALITY

FLYOVER PLANE DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERIC  
(FOR POWER AND DIRECTIVITY COMPUTATION)

ANGLE,  $\theta$  0. 30. 40. 50. 60. 70. 80. 90. 100. 110. 120.

COMPUTED QASPL 105.3 107.3 107.3 108.5 107.9 107.4 107.7 107.3 109.0 112.4 111.3

BAND FREQUENCY

1	25	88.8	90.0	96.3	97.0	97.2	97.7	97.7	98.7	98.2	104.2	99.3
2	32	89.8	95.2	97.5	100.2	99.5	98.3	100.3	98.7	100.2	102.5	100.8
3	40	89.8	98.7	97.7	100.8	101.2	98.3	99.5	98.8	99.3	103.7	101.0
4	50	92.7	98.5	99.8	100.2	99.8	97.2	98.7	97.8	101.0	104.2	102.3
5	63	93.2	97.5	97.3	97.7	95.5	96.3	97.2	97.8	99.8	103.3	102.0
6	80	94.0	96.5	95.0	94.5	94.0	96.0	96.3	96.0	98.3	101.2	99.8
7	100	95.2	92.5	91.5	92.3	92.7	94.0	94.2	94.3	96.8	98.8	99.3
8	125	93.0	90.5	91.8	93.5	93.7	94.3	94.3	94.0	97.2	98.2	100.0
9	160	91.0	90.4	92.0	92.9	92.7	93.2	92.9	92.9	94.5	97.2	98.7
10	200	89.5	92.2	91.7	92.7	91.9	92.5	92.7	92.7	93.7	97.5	98.5
11	250	87.4	89.2	88.9	91.0	90.2	92.2	91.9	91.0	92.9	97.0	97.5
12	315	85.6	88.1	88.1	89.9	90.7	92.2	91.2	89.9	92.7	95.6	96.9
13	400	83.6	86.9	86.4	88.4	88.8	90.4	90.8	89.9	90.8	94.8	96.4
14	500	81.6	84.8	84.8	88.3	88.1	88.0	86.6	86.6	89.6	93.6	93.8
15	630	80.2	82.5	83.9	85.5	85.2	87.0	86.5	86.5	88.5	92.0	92.3
16	800	83.4	83.2	84.1	86.4	86.2	87.7	86.1	85.7	88.1	91.7	91.4
17	1000	84.1	84.0	83.6	85.5	85.1	86.0	85.3	84.8	87.0	90.0	89.3
18	1250	89.2	86.9	85.4	86.0	84.7	85.4	83.5	83.4	85.5	88.5	88.2
19	1600	96.8	92.4	90.3	88.7	87.6	87.1	83.6	84.6	85.3	88.3	88.9
20	2000	88.4	88.5	86.7	86.0	84.0	84.0	81.2	80.9	83.0	85.7	85.2
21	2500	90.5	90.2	89.8	89.5	86.7	86.7	82.3	81.1	83.3	85.0	84.1
22	3150	94.1	94.5	95.1	94.8	91.6	90.3	85.8	83.6	84.5	85.0	84.5
23	4000	92.4	92.8	90.0	91.4	88.0	88.2	83.0	80.7	81.4	82.5	82.2
24	5000	91.4	92.9	90.3	91.9	89.1	88.6	83.3	81.3	80.7	81.3	81.1
25	6300	90.0	93.0	89.8	91.5	87.8	88.1	83.3	80.3	80.1	82.1	80.8
26	8000	87.2	90.9	88.4	89.5	86.0	86.4	81.4	78.7	78.0	78.7	78.2
27	10000	86.4	90.0	87.9	88.4	85.1	85.2	80.2	77.2	76.9	78.4	77.6
28	12500	83.6	87.6	85.8	85.5	81.9	83.3	77.8	73.8	73.6	76.8	76.0
29	16000	82.1	86.4	83.0	83.7	79.9	81.6	75.5	71.0	70.8	79.5	79.6

104

FOLDOUT FRAME /

D FROM THE ORIGINAL DATA.

CONFIGURATION NO 203

SPEED = 3124. RPM

PERCENT SPEED = 81.0

## LOSSLESS ARRAY

JET RADIUS WITH NO ATMOSPHERIC ATTENUATION  
POWER AND DIRECTIVITY COMPUTATIONS)ORIGINAL PAGE IS  
OF POOR QUALITY

80.	90.	100.	110.	120.	130.	180.
107.7	107.3	109.0	112.4	111.3	109.1	112.6

97.7	98.7	98.2	104.2	99.3	97.5	96.0
100.3	98.7	100.2	102.5	100.8	99.3	100.5
99.5	98.8	99.3	103.7	101.0	100.3	104.0
98.7	97.8	101.0	104.2	102.3	101.0	105.5
97.2	97.8	99.8	103.3	102.0	100.0	104.2
96.3	96.0	98.3	101.2	99.8	97.7	103.2
94.2	94.3	96.8	98.8	99.3	96.7	101.3
94.3	94.0	97.2	98.2	100.0	97.5	100.8
92.9	92.9	94.5	97.2	98.7	96.0	99.5
92.7	92.7	93.7	97.5	98.5	96.0	99.2
91.9	91.0	92.9	97.0	97.5	94.0	96.2
91.2	89.9	92.7	95.6	96.9	92.9	94.4
90.8	89.9	90.8	94.8	96.4	92.1	93.1
86.6	86.6	89.6	93.6	93.8	89.8	91.6
86.5	86.5	88.5	92.0	92.3	87.0	89.3
86.1	85.7	88.1	91.7	91.4	87.1	89.6
85.3	84.8	87.0	90.0	89.3	84.8	88.5
83.5	83.4	85.5	88.5	88.2	83.5	87.4
83.6	84.6	85.3	88.3	88.9	85.1	87.9
81.2	80.9	83.0	85.7	85.2	81.0	85.4
82.3	81.1	83.3	85.0	84.1	80.3	84.6
85.8	83.6	84.5	85.0	84.5	80.8	85.0
83.0	80.7	81.4	82.5	82.2	78.7	83.9
83.3	81.3	80.7	81.3	81.1	78.3	83.4
83.3	80.3	80.1	82.1	80.8	78.3	83.8
81.4	78.7	78.0	78.7	78.2	75.7	81.9
80.2	77.2	76.9	78.4	77.6	75.1	82.1
77.8	73.8	73.6	76.8	76.0	76.1	81.3
75.5	71.0	70.8	79.5	79.6	79.6	81.4

104

FOLDOUT FRAME

2

# SPL LOSSLESS DATA AT 100 FOOT RADIUS

QCSEE OTW ENGINE

BULK-ABSORBER INLET

3000 FT. RUNWAY CONF.

ENGINE WITH TAKE OFF FLAPS

READING NUMBERS = 8 9 10

CONFIGURATION NO = 203 SPEED = 1808. RPM

TEMPERATURE = 69.0 F RELATIVE HUMIDITY = 90.0 PC

## SIDEWIND PLANE BOOM MICROPHONES - LOSSLESS DATA

MIC # 14 15 16 17 18

R 0. 31. 43. 54. 35.

THETA,  $\theta_s$  90. 90. 90. 90. ~~90~~ 120

Z 106. 91. 86. 81. 65.

DISTANCE 91. 82. 83. 86. 61.

PHI,  $\phi$  0. 22. 31. 39. 35.

INDEX FREQ

1	25.	78.8	76.6	79.2	81.8	75.5
2	32.	77.6	78.4	80.5	82.8	75.9
3	40.	76.6	79.1	79.5	82.2	77.5
4	50.	79.8	84.4	85.3	87.0	80.5
5	63.	81.8	81.6	82.7	84.0	80.7
6	80.	80.8	81.8	80.8	81.2	81.2
7	100.	79.5	79.3	80.0	81.0	78.9
8	125.	79.0	78.4	80.2	81.0	78.4
9	160.	76.2	77.3	79.0	80.3	76.2
10	200.	78.0	79.9	80.7	81.0	76.4
11	250.	78.3	78.6	79.9	79.7	76.7
12	315.	77.0	77.3	77.5	78.5	75.6
13	400.	75.5	74.1	74.9	75.4	74.6
14	500.	73.4	73.3	73.1	74.2	73.4
15	630.	74.9	72.7	73.1	73.2	72.4
16	800.	78.9	77.2	76.3	77.6	75.3
17	1000.	75.8	73.7	73.2	74.5	73.5
18	1250.	75.5	73.1	72.5	72.5	72.2
19	1600.	73.5	71.0	70.2	70.7	70.5
20	2000.	70.7	67.8	67.8	67.6	67.2
21	2500.	71.3	67.6	67.7	67.5	66.8
22	3150.	70.9	66.3	67.1	66.7	66.2
23	4000.	71.0	65.8	66.5	66.7	66.8
24	5000.	73.1	66.6	68.2	68.3	68.8
25	6300.	77.3	70.9	73.2	74.6	74.0
26	8000.	75.3	68.7	71.5	72.7	70.6
27	10000.	74.9	64.8	69.8	69.5	66.2
28	12500.	80.9	67.1	71.9	72.1	70.1
29	16000.	74.0	59.6	65.8	65.9	65.1

OASPL 91.9 91.5 92.4 93.7 90.2

FOLDOUT FRAME /

105

10

SPEED = 1808. RPM

PERCENT SPEED 47.0

FGK 4298

E HUMIDITY = 90.0 PC

BARDMETER = 29.38 IN HG

XMII .272

S.S. 42

T. FRAME /

105

FOLDOUT FRAME

2



DATA OF 830. SUBSET NO. 42. READINGS 8 9 10

QCSEE OTW ENGINE  
BULK-ABSORBER INLET  
3000 FT. RUNWAY CONF.  
ENGINE WITH TAKE OFF FLAPS

SPL LOSSLESS ARRAY

FLYOVER PLANE DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERIC  
ENGINE CENTERLINE MICROPHONES  
(FOR POWER AND DIRECTIVITY COMPUTATION)

ANGLE 60. 90.

COMPUTED DASPL 98.4 97.8

BAND FREQUENCY

1	25	89.9	90.0
2	32	91.9	89.4
3	40	90.2	88.2
4	50	89.2	91.4
5	63	85.5	88.9
6	80	85.2	84.7
7	100	83.4	83.5
8	125	82.5	81.7
9	160	78.5	77.9
10	200	79.0	79.2
11	250	77.9	79.4
12	315	77.9	80.1
13	400	76.9	77.8
14	500	75.1	75.5
15	630	72.7	74.0
16	800	84.2	79.1
17	1000	77.4	74.4
18	1250	76.2	72.8
19	1600	77.7	72.1
20	2000	73.3	69.0
21	2500	74.4	68.7
22	3150	72.9	67.1
23	4000	73.3	66.6
24	5000	75.7	68.7
25	6300	82.8	74.1
26	8000	81.5	71.5
27	10000	80.6	68.2
28	12500	74.8	69.9
29	16000	74.8	64.4

CONFIGURATION NO 203  
SPEED = 1808. RPM  
PERCENT SPEED = 47.0

LOSSLESS ARRAY

T RADIUS WITH NO ATMOSPHERIC ATTENUATION  
ER AND DIRECTIVITY COMPUTATIONS)

106

FOLDOUT FRAME 2

DATA OF 830. SUBSET NO. 42. READINGS 8 9 10

SIX DECIBELS HAVE BEEN SUBTRACTED FROM THE ORIGINAL DATA.

QCSEE OTW ENGINE  
BULK-ABSORBER INLET  
3000 FT. RUNWAY CONF.  
ENGINE WITH TAKE OFF FLAPS

SPL LOSSLESS ARRAY

ORIGINAL PAGE IS  
OF POOR QUALITY

FLYOVER PLANE

DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERIC  
(FOR POWER AND DIRECTIVITY COMPUTATION)

		ANGLE	0.	30.	40.	50.	60.	70.	80.	90.	100.	110.	120.
		COMPUTED OASPL	105.2	97.4	97.7	94.9	94.6	93.2	92.5	93.3	93.2	93.2	93.2
BAND FREQUENCY													
1	25	78.0	82.2	85.3	83.7	85.7	84.7	85.7	87.5	83.7	83.5	84.0	84.0
2	32	79.2	84.0	86.3	85.3	89.3	85.5	83.5	84.0	84.0	81.8	80.0	80.0
3	40	79.0	83.5	88.2	85.5	82.8	83.7	92.8	82.0	81.5	82.2	83.0	83.0
4	50	82.0	86.2	89.5	85.7	85.2	83.0	84.0	85.7	87.3	87.0	85.0	85.0
5	63	83.2	84.8	86.0	84.5	83.8	80.7	83.2	84.0	83.0	84.3	84.0	84.0
6	80	81.3	83.0	85.0	79.7	79.3	80.5	80.8	80.3	82.5	82.2	81.0	81.0
7	100	83.0	80.2	81.5	78.5	78.7	81.2	77.8	77.8	81.2	80.2	78.0	78.0
8	125	82.3	77.8	80.0	79.8	78.7	78.8	77.8	77.8	79.8	79.5	80.0	80.0
9	160	80.9	76.9	79.9	79.2	77.5	78.0	76.0	76.9	76.0	78.4	78.0	78.0
10	200	83.4	77.7	82.5	79.5	77.5	77.9	77.0	77.7	77.2	78.4	79.0	79.0
11	250	79.7	77.2	78.4	76.5	76.7	77.4	76.5	77.5	77.9	78.2	79.0	79.0
12	315	76.1	75.1	75.7	75.6	75.1	75.7	75.2	75.1	76.6	76.6	76.0	76.0
13	400	72.9	71.6	72.6	72.1	73.1	73.2	71.7	71.9	73.2	73.7	76.0	76.0
14	500	71.6	70.5	71.8	71.1	71.6	70.8	69.8	69.3	71.6	73.1	74.0	74.0
15	630	72.2	71.7	72.2	70.7	70.5	70.3	69.0	69.7	70.0	71.8	72.0	72.0
16	800	83.0	83.2	81.9	80.5	78.4	76.7	75.4	74.0	73.2	75.2	77.0	77.0
17	1000	81.4	77.3	76.4	74.3	73.1	72.1	70.1	69.4	70.1	71.6	74.0	74.0
18	1250	82.5	77.3	76.8	73.6	72.1	71.0	68.1	68.8	69.3	71.1	73.0	73.0
19	1600	84.7	82.2	81.2	77.5	74.2	73.5	68.7	68.2	68.9	70.4	71.0	71.0
20	2000	82.3	77.8	76.8	72.3	69.6	68.3	65.8	64.1	66.6	67.8	68.0	68.0
21	2500	82.7	80.9	80.1	75.2	71.2	69.4	64.9	64.7	66.2	67.4	68.0	68.0
22	3150	81.4	79.9	79.0	74.5	70.7	68.7	64.4	63.5	65.0	66.5	67.0	67.0
23	4000	83.4	79.6	78.9	74.4	70.6	68.8	64.1	62.9	64.6	65.8	67.0	67.0
24	5000	82.4	80.0	78.7	75.7	72.2	70.2	64.3	65.2	66.2	66.8	68.0	68.0
25	6300	102.9	88.4	85.3	82.9	77.4	76.2	69.2	68.9	69.4	70.5	72.0	72.0
26	8000	98.9	92.0	89.5	83.4	78.8	77.7	70.7	68.2	68.3	69.3	70.0	70.0
27	10000	84.3	81.6	80.6	80.9	79.8	74.8	66.8	64.5	64.5	66.4	67.0	67.0
28	12500	89.2	78.5	76.0	73.9	71.8	70.3	63.9	64.1	66.2	69.2	70.0	70.0
29	16000	91.2	80.4	79.2	75.0	69.8	69.0	60.3	58.3	60.5	64.0	66.0	66.0

107

FOLDOUT FRAME

FROM THE ORIGINAL DATA.

CONFIGURATION NO 203  
 SPEED = 1808. RPM  
 PERCENT SPEED = 47.0

LOSSLESS ARRAY

1. RADIUS WITH NO ATMOSPHERIC ATTENUATION  
 2. RADIUS AND DIRECTIVITY COMPUTATIONS)

ORIGINAL PAGE IS  
 OF POOR QUALITY

80. 90. 100. 110. 120. 130. 140.  
 92.5 93.3 93.2 93.2 93.5 92.7 94.2

85.7	87.5	83.7	83.5	84.8	81.8	86.5
83.5	84.0	84.0	81.8	80.8	81.8	84.8
82.8	82.0	81.5	82.2	83.5	83.2	82.8
84.0	85.7	87.3	87.0	85.5	84.2	84.2
83.2	84.0	83.0	84.3	84.8	82.7	85.3
80.8	80.3	82.5	82.2	81.8	79.5	85.5
77.8	77.8	81.2	80.2	78.8	78.0	82.8
77.8	77.8	79.8	79.5	80.3	80.5	79.5
76.0	76.9	76.0	78.4	78.7	78.4	77.9
77.0	77.7	77.2	78.4	79.7	80.9	78.7
76.5	77.5	77.9	78.2	79.0	79.7	78.0
75.2	75.1	76.6	76.6	76.7	77.7	75.9
71.7	71.9	73.2	73.7	76.1	76.9	72.6
69.8	69.3	71.6	73.1	74.1	73.4	72.5
69.0	69.7	70.0	71.8	72.8	72.8	70.8
75.4	74.0	73.2	75.2	77.7	76.4	74.5
70.1	69.4	70.1	71.6	74.1	74.4	72.1
68.1	68.8	69.3	71.1	73.5	74.5	70.6
68.7	68.2	68.9	70.4	71.2	72.5	68.9
65.8	64.1	66.6	67.8	68.1	68.9	67.3
64.9	64.7	66.2	67.4	68.7	68.1	67.1
64.4	63.5	65.0	66.5	67.5	67.2	66.7
64.1	62.9	64.6	65.8	67.3	66.4	66.6
64.3	65.2	66.2	66.8	68.0	67.5	67.5
69.2	68.9	69.4	70.5	72.2	71.2	71.5
70.7	68.2	68.3	69.3	70.0	68.5	68.7
66.8	64.5	64.5	66.4	67.4	66.1	67.8
63.9	64.1	66.2	69.2	70.9	70.0	73.9
60.3	58.3	60.5	64.0	66.2	65.6	70.3

107

FOLDOUT FRAME

2

*SPL* LOSSLESS DATA AT 100 FOOT RADIUS

QCSEE OTW ENGINE

BULK-ABSORBER INLET

ORIGINAL PAGE IS  
OF POOR QUALITY

3000 FT. RUNWAY CONF.

ENGINE WITH TAKE OFF FLAPS

READING NUMBERS = 11

CONFIGURATION NO = 203

SPEED = 3600. RPM

TEMPERATURE = 68.0 F

RELATIVE HUMIDITY = 88.0 PC

*SIDELINE PLANE* BOOM MICROPHONES - LOSSLESS DATA

MIC #	14	15	16	17	18
R	0.	31.	43.	54.	35.
THETA, $\theta_s$	90.	90.	90.	90.	<del>90.</del> 120
Z	106.	91.	86.	81.	65.
DISTANCE	91.	82.	83.	86.	61.
PHI, $\phi$	0.	22.	31.	39.	35.

INDEX FREQ

1	25.	93.1	92.8	94.8	96.2	95.7
2	32.	94.6	94.8	99.3	100.2	93.2
3	40.	96.1	97.8	98.8	98.2	94.7
4	50.	95.6	98.8	102.8	103.2	97.7
5	63.	95.6	96.3	102.8	101.7	99.2
6	80.	102.6	102.3	102.3	102.2	101.2
7	100.	98.1	103.3	103.9	103.7	100.7
8	125.	100.6	100.8	102.9	104.2	102.2
9	160.	96.2	97.8	101.9	102.7	99.7
10	200.	96.7	99.3	99.9	100.2	100.7
11	250.	96.2	99.8	101.9	103.7	100.2
12	315.	96.2	99.8	101.4	101.7	97.7
13	400.	96.7	98.8	100.4	101.7	98.2
14	500.	95.7	98.8	100.4	100.2	97.3
15	630.	94.7	97.8	98.9	99.2	96.3
16	800.	94.8	97.9	99.0	99.3	96.3
17	1000.	94.3	97.4	98.0	98.8	96.3
18	1250.	93.3	96.9	98.5	99.3	94.3
19	1600.	95.4	96.0	97.1	96.9	92.9
20	2000.	91.9	95.0	96.1	95.9	91.4
21	2500.	90.0	93.1	95.6	94.5	89.9
22	3150.	89.1	91.1	93.2	92.6	89.0
23	4000.	88.7	89.3	92.4	92.2	88.6
24	5000.	88.9	88.5	90.6	90.9	88.7
25	6300.	88.3	86.8	88.9	89.7	89.5
26	8000.	86.8	83.2	87.4	88.2	86.3
27	10000.	87.2	80.5	86.1	87.0	80.8
28	12500.	87.4	77.1	82.7	84.2	79.3
29	16000.	86.9	73.8	81.6	82.0	80.2

FOLDOUT FRAME /

OASPL 110.0 111.9 113.9 114.3 111.4

USE WITH CAUTION  
FLAP SKIN TORE DURING  
READING GENERATING NOISE

SPEED = 3600. RPM

PERCENT SPEED 95.0

FGK 19737

HUMIDITY = 88.0 PC

BAROMETER = 29.38 IN HG

XM11 .791

ORIGINAL PAGE IS  
OF POOR QUALITY

SS. 43

FRAME /

108

FOLDOUT FRAME

2

DATA OF 830. SUBSET NO. 43. READINGS 11 X 10

QCSEE OTW ENGINE  
BULK-ABSORBER INLET  
3000 FT. RUNWAY CONF.  
ENGINE WITH TAKE OFF FLAPS

SPL LOSSLESS ARRAY

FLYOVER PLANE DATA AT 100.0 FT RADIUS WITH NO ATMOSPHER  
(FOR POWER AND DIRECTIVITY COMPUTA

ANGLE  $\theta_F$  60. 90.

COMPUTED OASPL 117.1 119.7

BAND FREQUENCY

1	25	103.5	107.0
2	32	107.0	110.0
3	40	109.5	108.0
4	50	107.0	111.0
5	63	104.0	109.5
6	80	105.0	109.5
7	100	103.5	107.0
8	125	105.0	107.0
9	160	101.5	105.0
10	200	100.0	101.5
11	250	98.1	101.1
12	315	102.1	104.1
13	400	102.6	110.1
14	500	105.6	106.1
15	630	105.2	102.2
16	800	100.7	102.2
17	1000	102.8	102.3
18	1250	99.3	99.3
19	1600	98.4	99.4
20	2000	97.0	97.5
21	2500	94.6	97.6
22	3150	91.2	94.2
23	4000	89.5	92.0
24	5000	89.8	91.8
25	6300	89.4	91.9
26	8000	85.2	88.7
27	10000	86.1	87.1
28	12500	82.2	85.2
29	16000	85.2	84.9

FOLDOUT FRAME /

CONFIGURATION NO 203  
SPEED = 3600. RPM  
PERCENT SPEED = 95.0

SSLESS ARRAY

RADIUS WITH NO ATMOSPHERIC ATTENUATION  
AND DIRECTIVITY COMPUTATIONS)

109

FOLDOUT FRAME 2



DATA OF 830. SUBSET NO. 43. READINGS 11 ~~8~~ 10

SIX DECIBELS HAVE BEEN SUBTRACTED FROM THE ORIGINAL DATA.

QCSEE OTW ENGINE  
BULK-ABSORBER INLET  
3000 FT. RUNWAY CONF.  
ENGINE WITH TAKE OFF FLAPS

ORIGINAL PAGE IS  
OF POOR QUALITY

SPL LOSSLESS ARRAY

FLYOVER PLANE DATA AT 100.0 FT RADIUS WITH NO ATMOSPHER  
(FOR POWER AND DIRECTIVITY COMPUTA

ANGLE,  $\theta$  0. 30. 40. 50. 60. 70. 80. 90. 100. 110. 120.

COMPUTED DASPL 107.5 110.2 111.8 111.7 112.2 112.8 113.3 114.3 115.7 116.5 117.0

BAND FREQUENCY

1	25	91.5	96.0	98.0	99.0	99.5	98.0	100.5	103.0	99.5	99.0	103.0
2	32	93.5	97.0	102.5	102.5	105.0	103.5	101.5	103.0	102.0	105.0	102.0
3	40	96.5	100.5	105.0	102.5	102.0	103.0	103.5	103.0	104.5	106.0	105.0
4	50	97.5	102.5	104.0	104.5	102.0	101.0	103.0	103.0	106.5	107.5	106.0
5	63	98.0	101.5	102.5	101.0	99.5	100.5	103.0	103.0	106.0	106.0	106.0
6	80	98.5	101.5	99.5	99.0	99.5	100.0	102.0	102.5	104.5	103.0	107.0
7	100	98.5	98.5	96.0	96.0	99.0	100.0	101.5	100.5	101.0	103.0	105.0
8	125	97.0	95.5	97.0	98.0	100.5	99.0	100.5	103.0	105.0	105.0	106.0
9	160	96.0	95.0	96.5	98.5	97.5	99.0	100.5	101.0	103.5	103.5	104.0
10	200	95.0	97.0	96.0	97.0	97.5	98.0	98.5	100.5	102.0	104.0	107.0
11	250	92.0	95.0	95.5	96.0	97.5	98.0	98.5	100.5	102.5	105.0	107.0
12	315	92.1	94.6	95.1	96.1	98.1	99.1	99.1	100.6	101.6	103.6	105.0
13	400	91.1	94.1	95.6	95.6	96.6	98.1	97.6	104.1	104.1	104.1	106.0
14	500	90.1	92.1	95.1	96.6	98.6	97.1	98.6	100.1	102.1	103.1	104.0
15	630	89.2	91.7	93.2	93.2	95.2	98.2	95.7	97.7	98.2	100.7	100.0
16	800	88.7	94.2	94.2	94.2	96.2	97.7	96.7	99.2	101.2	99.7	100.0
17	1000	85.8	90.8	92.8	95.8	96.3	97.8	96.3	97.8	98.3	98.8	98.0
18	1250	84.8	89.8	90.8	90.8	94.8	98.3	97.3	96.3	96.8	97.8	96.0
19	1600	86.9	89.4	92.4	90.9	93.4	96.4	94.4	95.9	96.4	96.4	96.0
20	2000	83.4	87.9	89.9	90.4	93.4	98.0	97.0	93.9	95.4	95.9	94.0
21	2500	82.6	88.1	89.1	90.1	90.5	96.5	95.6	94.6	94.5	94.6	93.0
22	3150	82.2	85.7	90.2	91.2	88.2	94.2	94.7	92.2	92.2	93.2	91.0
23	4000	80.9	84.4	88.4	90.9	86.9	92.9	92.9	89.9	91.4	90.9	90.0
24	5000	80.3	83.3	85.8	87.8	86.8	91.8	90.8	88.8	90.3	89.3	89.0
25	6300	78.8	83.3	84.3	86.3	84.8	89.3	88.8	87.8	89.3	88.4	88.0
26	8000	76.7	79.7	81.7	83.2	82.2	86.7	86.2	85.2	87.2	86.7	86.0
27	10000	75.1	78.5	79.5	80.5	81.0	85.0	83.5	83.5	85.5	86.1	84.0
28	12500	75.8	75.7	76.2	78.2	78.1	82.1	80.6	80.1	83.1	84.1	82.0
29	16000	79.3	79.3	79.2	79.0	79.0	80.3	79.3	78.8	80.2	82.8	82.0

110

FOLDOUT FRAME 1

10

FROM THE ORIGINAL DATA.

CONFIGURATION NO 203  
SPEED = 3600. RPM  
PERCENT SPEED = 95.0

LOSSLESS ARRAY

ET RADIUS WITH NO ATMOSPHERIC ATTENUATION  
AND DIRECTIVITY COMPUTATIONS)

ORIGINAL PAGE IS  
OF POOR QUALITY

80. 90. 100. 110. 120. 130. 180.  
113.3 114.3 115.7 116.5 117.5 116.8 121.2

100.5	103.0	99.5	99.0	103.5	103.0	102.0
101.5	103.0	102.0	105.0	102.5	105.5	106.5
103.5	103.0	104.5	106.0	105.5	108.5	111.0
103.0	103.0	106.5	107.5	106.5	107.5	115.0
103.0	103.0	106.0	106.0	106.5	107.5	114.0
102.0	102.5	104.5	103.0	107.0	106.0	113.0
101.5	100.5	101.0	103.0	105.0	103.5	110.0
100.5	103.0	105.0	105.0	106.0	105.5	108.5
100.5	101.0	103.5	103.5	104.0	103.5	103.5
98.5	100.5	102.0	104.0	107.0	103.5	105.0
98.5	100.5	102.5	105.0	107.0	102.0	104.0
99.1	100.6	101.6	103.6	105.6	101.6	102.6
97.6	104.1	104.1	104.1	106.6	101.6	101.1
98.6	100.1	102.1	103.1	104.1	101.6	100.6
95.7	97.7	98.2	100.7	100.2	98.7	99.2
96.7	99.2	101.2	99.7	100.2	99.7	99.2
96.3	97.8	98.3	98.8	98.3	96.8	98.8
97.3	96.3	96.8	97.8	96.8	95.8	98.3
94.4	95.9	96.4	96.4	96.4	94.4	97.4
97.0	93.9	95.4	95.9	94.4	93.4	96.9
95.6	94.6	94.5	94.6	93.1	91.5	96.6
94.7	92.2	92.2	93.2	91.7	90.2	95.2
92.9	89.9	91.4	90.9	90.4	87.9	94.4
90.8	88.8	90.3	89.3	89.3	86.3	92.8
88.8	87.8	89.3	88.4	88.3	86.4	91.8
86.2	85.2	87.2	86.7	86.2	84.2	89.2
83.5	83.5	85.5	86.1	84.6	82.0	89.1
80.6	80.1	83.1	84.1	82.6	80.1	87.1
79.3	78.8	80.2	82.8	82.4	79.4	86.9

110

FOLDOUT FRAME

2

# SPL LOSSLESS DATA AT 100 FOOT RADIUS

QCSEE CTW ENGINE

PULK ABSORBER INLET

3000 FT. RUNWAY CONF.

ENGINE WITH TAKE OFF FLAPS

READING NUMBERS = 12 13 14

CONFIGURATION NO = 203

SPEED = 3700. RPM

TEMPERATURE = 73.0 F

RELATIVE HUMIDITY = 76.0 PC

ORIGINAL PAGE IS  
OF POOR QUALITY

*SIDELINE PLANE*

BOOM MICROPHONES - LOSSLESS DATA

MIC # 14 15 16 17 18

R 0. 31. 43. 54. 35.

THETA,  $\theta_s$  90. 90. 90. 90. ~~90~~ *X120*

Z 106. 91. 86. 81. 65.

DISTANCE 91. 82. 83. 86. 61.

PHI,  $\phi$  0. 22. 31. 39. 35.

INDEX FREQ

1	25.	92.1	90.1	96.2	97.7	93.5
2	32.	94.5	96.6	104.1	99.5	94.4
3	40.	96.8	95.9	100.7	100.8	96.5
4	50.	97.5	98.3	104.7	101.8	97.7
5	63.	96.3	97.4	103.3	100.7	97.9
6	80.	99.0	99.4	100.8	101.3	99.2
7	100.	97.5	97.6	99.4	100.2	98.5
8	125.	99.6	99.3	101.5	100.3	99.4
9	160.	96.2	97.6	99.0	99.3	96.4
10	200.	97.3	98.3	100.0	99.3	96.9
11	250.	95.7	97.6	99.7	99.0	96.1
12	315.	94.3	97.3	98.7	98.7	94.9
13	400.	95.4	96.6	97.9	97.9	93.9
14	500.	95.2	95.7	97.4	97.4	93.9
15	630.	93.1	94.5	95.9	96.1	92.4
16	800.	93.3	94.7	95.8	95.4	92.1
17	1000.	91.8	93.1	94.2	94.1	91.3
18	1250.	90.3	92.4	93.0	93.5	90.3
19	1600.	91.2	92.0	92.7	93.1	89.7
20	2000.	89.9	90.3	91.8	91.4	88.1
21	2500.	87.8	87.9	89.3	89.3	85.5
22	3150.	88.3	87.3	88.6	88.8	85.7
23	4000.	88.1	86.1	87.9	87.9	85.4
24	5000.	88.0	85.2	87.3	86.9	85.4
25	6300.	89.3	84.5	87.1	87.1	85.5
26	8000.	87.0	82.3	85.7	85.4	83.2
27	10000.	86.7	79.5	84.5	84.6	81.8
28	12500.	87.0	76.2	81.8	81.9	80.1
29	16000.	86.9	73.5	80.9	80.0	77.6

FOLDOUT FRAME /

OASPL

108.9 109.6 112.9 111.9 109.8

ORIGINAL PAGE IS  
OF POOR QUALITY

14

SPEED = 3700. RPM

PERCENT SPEED 96.0

FGK

20333

E HUMIDITY = 76.0 PC

BAROMETER = 29.38 IN HG

XM 11

.777

UT FRAME /

FOLDOUT FRAME

5.2 44

2

111

DATA OF 831. SUBSET NO. 44. READINGS 12 13 14

COSEE DTW ENGINE  
BULK ABSORBER INLET  
3000 FT. RUNWAY CONF.  
ENGINE WITH TAKE OFF FLAPS

ORIGINAL PAGE IS  
OF POOR QUALITY

SPL

LOSSLESS ARRAY

FLYOVER PLANE

DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERIC  
(FOR POWER AND DIRECTIVITY COMPUTATION)

ENGINE CENTERLINE MICROPHONES

ANGLE 0. 60. 90.

COMPUTED CASPL 115.7 120.0

BAND FREQUENCY

1	25	103.2	112.0
2	32	108.5	112.0
3	40	109.0	110.7
4	50	109.5	111.7
5	63	104.5	110.0
6	80	104.2	108.2
7	100	102.4	107.7
8	125	102.7	106.4
9	160	98.9	102.7
10	200	98.4	101.0
11	250	96.2	100.2
12	315	97.4	101.2
13	400	98.1	101.6
14	500	96.6	100.6
15	630	95.7	99.5
16	800	96.2	99.1
17	1000	94.6	97.0
18	1250	93.0	96.5
19	1600	92.6	94.3
20	2000	92.2	94.0
21	2500	89.1	92.8
22	3150	87.9	91.3
23	4000	88.7	89.5
24	5000	87.7	89.2
25	6300	85.4	90.1
26	8000	84.8	86.3
27	10000	82.2	84.7
28	12500	80.4	83.1
29	16000	77.9	85.4

112

FOLDOUT FRAME /

CONFIGURATION NO 203  
SPEED = 3700. RPM  
PERCENT SPEED = 96.0

S S L E S S A R R A Y

ORIGINAL PAGE IS  
OF POOR QUALITY

RADIUS WITH NO ATMOSPHERIC ATTENUATION  
AND DIRECTIVITY COMPUTATIONS)

112

FOLDOUT FRAME

2

DATA OF 831. SURSET NO. 44. READINGS 12 13 14

SIX DECIBELS HAVE BEEN SUBTRACTED FROM THE ORIGINAL DATA.

OCSEE OTW ENGINE  
BULK ABSORBER INLET  
3000 FT. RUNWAY CONC.  
ENGINE WITH TAKE OFF FLAPS

ORIGINAL PAGE IS  
OF POOR QUALITY

*SPL* LOSSLESS ARRAY

*FLYOVER PLANE* DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERIC  
(FOR POWER AND DIRECTIVITY COMPUTATION)

ANGLE  $\theta$  0. 30. 40. 50. 60. 70. 80. 90. 100. 110. 120.

COMPUTED DASPL 108.6 111.5 111.0 112.2 114.3 111.2 112.5 113.3 114.9 116.5 117.0

BAND FREQUENCY

1	25	91.8	96.7	95.3	99.0	103.2	98.3	99.5	103.5	103.2	102.7	101.0
2	32	95.3	99.8	101.2	103.0	104.5	101.7	103.8	104.2	102.3	104.5	106.0
3	40	95.2	102.8	102.8	105.8	108.7	102.5	102.8	102.7	104.0	107.2	108.0
4	50	99.7	105.2	104.0	104.5	107.2	100.2	103.2	104.0	107.8	107.5	108.0
5	63	99.5	102.3	102.3	102.5	103.3	100.0	103.7	104.0	104.7	105.8	109.0
6	80	100.2	100.5	99.2	98.8	100.0	100.3	103.2	102.2	104.5	106.8	106.0
7	100	99.5	100.5	95.8	98.2	99.0	99.5	99.2	101.8	104.0	104.8	105.0
8	125	97.7	98.5	97.0	98.3	100.2	98.7	99.7	101.5	103.0	104.8	106.0
9	160	96.9	97.9	97.4	97.4	98.4	98.9	98.9	99.5	101.0	103.5	105.0
10	200	96.2	97.4	96.7	96.7	97.4	97.4	98.4	99.5	100.2	103.7	105.0
11	250	92.9	95.4	94.9	96.0	96.9	96.5	98.0	98.0	100.2	102.5	104.0
12	315	92.1	94.7	94.6	95.4	97.6	97.2	96.4	97.4	99.6	102.4	103.0
13	400	91.8	92.9	93.9	94.6	96.1	96.4	96.9	97.3	98.6	101.3	102.0
14	500	91.0	92.3	93.3	94.6	95.5	95.1	94.1	95.1	97.8	100.6	100.0
15	630	90.3	91.7	92.2	92.5	92.7	94.3	93.7	94.8	96.5	98.8	99.0
16	800	88.7	90.7	92.6	93.4	94.1	94.6	93.6	94.2	96.6	98.2	98.0
17	1000	87.3	89.9	91.1	92.4	92.9	93.9	92.6	93.4	95.4	96.6	96.0
18	1250	86.8	88.0	89.7	90.5	90.7	92.7	91.3	91.7	93.7	95.7	95.0
19	1600	90.6	89.4	90.1	91.2	90.6	91.9	90.6	90.9	93.2	95.4	94.0
20	2000	89.0	88.1	88.5	90.0	90.0	91.1	89.8	90.0	93.2	94.8	93.0
21	2500	84.6	84.6	85.4	86.4	85.9	87.9	86.6	88.4	91.1	91.4	90.0
22	3150	85.3	84.9	85.1	85.1	85.3	87.6	85.8	87.1	89.7	89.7	89.0
23	4000	83.8	83.3	83.8	84.8	84.0	86.3	84.7	86.2	88.2	88.3	88.0
24	5000	82.0	82.0	82.7	83.4	82.9	84.9	83.4	85.4	87.4	86.7	87.0
25	6300	80.7	80.7	81.6	82.1	81.8	83.9	82.4	84.1	86.2	85.8	87.0
26	8000	77.8	77.4	78.5	79.8	82.4	80.8	79.8	81.3	83.4	83.8	84.0
27	10000	76.0	76.0	77.3	78.0	83.8	79.2	78.7	79.1	81.5	82.9	83.0
28	12500	73.2	76.0	75.0	76.4	86.1	76.7	75.9	76.2	78.6	81.5	81.0
29	16000	71.7	79.5	79.5	79.4	89.5	79.4	79.5	79.5	79.2	80.9	81.0

113

FROM THE ORIGINAL DATA.

CONFIGURATION NO 203  
 SPEED = 3700. RPM  
 PERCENT SPEED = 96.0

S S L E S S A R R A Y

RADIUS WITH NO ATMOSPHERIC ATTENUATION  
 AND DIRECTIVITY COMPUTATIONS)

ORIGINAL PAGE IS  
 OF POOR QUALITY

0. 90. 100. 110. 120. 130. 180.

.5 113.3 114.9 116.5 117.9 117.3 113.5

.5	103.5	103.2	102.7	101.5	105.7	102.7
.8	104.2	102.3	104.5	106.7	106.2	104.8
.8	102.7	104.0	107.2	108.3	107.2	108.7
.2	104.0	107.8	107.5	108.8	109.3	112.3
.7	104.0	104.7	105.8	109.3	108.5	111.8
.2	102.2	104.5	106.8	106.8	107.3	109.8
.2	101.8	104.0	104.8	105.3	106.8	107.0
.7	101.5	103.0	104.8	106.8	106.3	105.8
.9	99.5	101.0	103.5	105.9	103.9	103.0
.4	99.5	100.2	103.7	105.7	102.7	102.0
.0	98.0	100.2	102.5	104.5	101.5	99.7
.4	97.4	99.6	102.4	103.4	100.1	98.9
.9	97.3	98.6	101.3	102.9	100.8	97.1
.1	95.1	97.8	100.6	100.1	97.6	96.0
.7	94.8	96.5	98.8	99.5	96.3	93.8
.6	94.2	96.6	98.2	98.7	96.6	95.1
.6	93.4	95.4	96.6	96.6	94.9	94.4
.3	91.7	93.7	95.7	95.0	93.0	93.5
.6	90.9	93.2	95.4	94.6	92.7	93.4
.8	90.0	93.2	94.8	93.2	92.0	93.3
.6	88.4	91.1	91.4	90.9	89.3	91.6
.8	87.1	89.7	89.7	89.6	87.9	90.1
.7	86.2	88.2	88.3	88.9	87.3	89.2
.4	85.4	87.4	86.7	87.7	86.0	87.5
.4	84.1	86.2	85.8	87.1	85.9	87.4
.8	81.3	83.4	83.8	84.8	83.6	85.0
.7	79.1	81.5	82.9	83.8	82.2	83.8
.9	76.2	78.6	81.5	81.9	79.4	82.1
.5	79.5	79.2	80.9	81.3	79.1	82.0

113

FOLDOUT FRAME

2



# SPL LOSSLESS DATA AT 100 FOOT RADIUS

OCSEF OTW ENGINE

BULK ABSORBER INLET

3000 FT. RUNWAY CONF.

ORIGINAL PAGE IS  
OF POOR QUALITY

ENGINE WITH TAKE OFF FLAPS

READING NUMBERS = 15 16 17

CONFIGURATION NO = 203

SPEED = 3441. RPM

TEMPERATURE = 73.0 F

RELATIVE HUMIDITY = 74.0 PC

## SIDELINE PLANE BOOM MICROPHONES - LOSSLESS DATA

MIC # 14 15 16 17 18

R 0. 31. 43. 54. 35.

THETA,  $\theta_s$  90. 90. 90. 90. ~~90.~~ 120

Z 106. 91. 86. 81. 65.

DISTANCE 91. 82. 83. 86. 61.

PHI,  $\phi$  0. 22. 31. 39. 35.

INDEX FREQ

1	25.	91.8	89.4	95.3	95.2	92.4
2	32.	94.1	94.9	96.3	98.3	94.2
3	40.	93.8	94.8	96.8	93.8	95.4
4	50.	95.8	98.4	99.3	99.5	96.7
5	63.	96.1	97.1	97.8	97.7	96.2
6	80.	96.5	96.8	97.3	98.0	96.9
7	100.	95.5	94.8	96.4	99.0	95.0
8	125.	96.8	96.3	97.0	98.8	97.5
9	160.	95.2	95.3	95.9	97.3	93.4
10	200.	96.2	94.4	96.0	97.7	94.6
11	250.	94.9	95.8	96.4	97.3	94.1
12	315.	93.8	94.1	95.4	97.0	92.7
13	400.	94.2	93.8	94.7	95.4	91.1
14	500.	93.9	93.0	93.7	94.9	90.9
15	630.	91.6	91.8	92.8	92.4	89.8
16	800.	92.4	91.0	91.6	92.3	89.3
17	1000.	90.5	89.2	90.7	90.5	88.3
18	1250.	89.3	88.4	89.5	89.8	87.2
19	1600.	93.9	91.8	93.7	91.7	89.5
20	2000.	93.4	87.2	87.9	88.3	84.7
21	2500.	86.8	85.6	86.3	87.0	83.6
22	3150.	89.1	86.2	87.4	87.9	84.4
23	4000.	87.2	84.5	85.7	86.2	83.1
24	5000.	88.1	83.8	85.8	85.6	83.6
25	6300.	88.2	83.1	85.8	85.4	83.7
26	8000.	86.6	80.5	83.9	84.0	81.9
27	10000.	86.8	77.7	82.9	82.8	80.5
28	12500.	87.1	74.2	80.4	80.5	78.9
29	16000.	87.4	71.9	79.5	78.8	76.7

FOLDOUT FRAME

DASPL

107.7 107.5 108.7 109.7 106.8

ORIGINAL PAGE IS  
OF POOR QUALITY

17

SPEED = 3441. RPM

PERCENT SPEED 90.0

FGK

17861

E HUMIDITY = 74.0 PC

BAROMETER = 29.38 IN HG

XM11

.672

S.S. 45

IT FRAME 1

114

FOLDOUT FRAME

2

DATA OF 331. SURSET NO. 45. READINGS 15 16 17

QCSFE OTW ENGINE  
BULK ABSORBER INLET  
3000 FT. RUNWAY CONF.  
ENGINE WITH TAKE OFF FLAPS

*SPL*

LOSSLESS ARRAY

*FLYOVER PLANE* DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERIC  
(FOR POWER AND DIRECTIVITY COMPUTATION)

*ENGINE CENTERLINE MICROPHONES*

ANGLE *90* 60. 90.

COMPUTED OASPL 114.1 117.4

BAND FREQUENCY

1	25	102.4	109.4
2	32	105.9	108.4
3	40	109.0	106.9
4	50	105.5	110.7
5	63	102.5	107.7
6	80	102.2	107.2
7	100	101.0	104.2
8	125	101.4	102.4
9	160	97.0	100.7
10	200	96.2	98.5
11	250	94.9	98.4
12	315	96.1	99.8
13	400	96.3	98.9
14	500	94.1	98.0
15	630	93.5	97.0
16	800	93.2	96.2
17	1000	92.6	94.8
18	1250	91.5	93.2
19	1600	97.4	94.6
20	2000	90.8	90.8
21	2500	88.8	90.4
22	3150	91.8	90.9
23	4000	89.7	87.5
24	5000	90.9	88.6
25	6300	88.0	89.1
26	8000	86.7	84.8
27	10000	84.2	83.3
28	12500	82.0	82.2
29	16000	79.5	85.7

115

FOLDOUT FRAME |

CONFIGURATION NO 203  
SPEED = 3441. RPM  
PERCENT SPEED = 90.0

LOSSLESS ARRAY

(RADIUS WITH NO ATMOSPHERIC ATTENUATION  
(PER AND DIRECTIVITY COMPUTATIONS)

NBS

115

FOLDOUT FRAME

2

DATA OF 831. SUBSET NO. 45. READINGS 15 16 17

SIX DECIBELS HAVE BEEN SUBTRACTED FROM THE ORIGINAL DATA.

OCSEE OTW ENGINE  
BULK ABSORBER INLET  
3000 FT. RUNWAY CONC.  
ENGINE WITH TAKE OFF FLAPS

ORIGINAL PAGE IS  
OF POOR QUALITY

SPL LOSSLESS ARRAY

FLYOVER PLANE DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERIC  
(FOR POWER AND DIRECTIVITY COMPUTATION)

		ANGLE, $\theta$	0.	30.	40.	50.	60.	70.	80.	90.	100.	110.	120.
COMPUTED GASPL			108.8	110.5	110.3	111.2	110.5	109.8	110.3	110.9	112.3	114.1	116.1
BAND	FREQUENCY												
1	25		90.3	96.7	95.8	99.8	98.8	97.5	98.8	100.2	101.0	102.5	103.2
2	32		92.2	100.3	101.5	102.2	102.2	99.7	101.5	101.2	102.2	103.5	105.2
3	40		94.7	102.2	102.0	104.3	103.0	101.5	101.7	102.3	101.5	104.8	106.7
4	50		96.7	102.5	103.2	102.2	101.2	100.0	101.2	100.8	104.8	105.5	105.8
5	63		96.2	101.2	101.2	100.8	98.5	98.7	99.8	101.3	103.0	103.2	106.3
6	80		98.0	99.8	98.2	97.8	97.8	97.7	99.5	100.0	101.3	103.3	105.5
7	100		99.0	98.0	93.5	96.5	97.3	97.7	97.7	98.2	100.5	102.7	104.3
8	125		96.8	95.2	95.5	98.0	97.0	97.3	97.5	98.7	100.2	102.8	105.2
9	160		96.0	94.0	95.4	96.7	96.2	97.2	96.0	97.4	98.0	100.9	104.5
10	200		94.9	95.4	95.5	96.2	95.9	96.2	95.7	96.9	98.4	101.0	104.0
11	250		92.0	93.9	93.2	94.7	94.5	94.5	96.4	96.5	97.9	99.4	103.0
12	315		91.1	92.2	92.6	94.1	95.2	94.9	94.9	95.4	96.7	99.2	101.6
13	400		89.6	90.9	91.3	93.1	94.1	94.1	94.8	94.9	95.8	98.4	101.3
14	500		89.1	90.5	91.3	93.3	93.1	92.5	91.5	92.5	95.0	97.6	98.1
15	630		88.7	89.5	90.2	91.7	91.0	91.3	90.7	92.7	93.7	95.8	97.3
16	800		87.1	89.1	89.6	91.6	92.1	92.1	90.9	91.9	93.2	95.4	96.6
17	1000		87.4	88.6	88.6	90.8	90.3	90.9	89.8	90.9	91.9	94.3	94.6
18	1250		92.0	88.8	88.8	89.8	88.8	89.7	88.7	89.7	90.5	92.8	93.2
19	1600		101.6	98.6	96.7	94.9	94.9	94.1	92.6	92.6	91.1	93.9	93.4
20	2000		92.5	90.5	90.1	88.8	88.1	88.3	87.0	87.6	88.3	91.1	90.3
21	2500		91.4	88.8	88.3	87.6	86.3	86.9	85.4	86.6	87.3	89.8	88.9
22	3150		96.8	94.1	92.6	90.9	89.8	90.4	87.1	87.3	87.9	88.9	88.8
23	4000		91.5	89.2	89.3	88.0	86.7	87.2	83.7	84.8	85.5	86.7	87.0
24	5000		92.5	89.5	89.5	87.4	87.0	87.2	83.2	84.0	85.0	85.2	86.4
25	6300		90.4	87.4	87.6	85.3	83.2	85.6	81.6	83.1	83.9	84.6	86.1
26	8000		87.7	84.5	84.7	82.8	80.1	82.0	79.3	80.0	81.0	82.4	83.5
27	10000		85.5	82.7	82.7	81.9	80.1	80.4	78.1	77.9	78.9	81.9	82.6
28	12500		82.7	80.9	80.4	79.4	78.0	77.9	76.0	76.0	76.3	79.7	80.6
29	16000		81.0	80.5	80.0	79.3	79.5	79.5	79.7	79.7	79.7	79.3	81.1

116

FOLDOUT FRAME /

FROM THE ORIGINAL DATA.

CONFIGURATION NO 203  
 SPEED = 3441. RPM  
 PERCENT SPEED = 90.0

LOSSLESS ARRAY

AT RADIUS WITH NO ATMOSPHERIC ATTENUATION  
 AND DIRECTIVITY COMPUTATIONS)

ORIGINAL PAGE IS  
 OF POOR QUALITY

80. 90. 100. 110. 120. 130. 180.  
 10.3 110.9 112.3 114.1 116.1 115.3 116.5

98.8	100.2	101.0	102.5	103.2	101.8	101.0
101.5	101.2	102.2	103.5	105.2	106.3	105.5
101.7	102.3	101.5	104.8	106.7	106.3	109.5
101.2	100.8	104.8	105.5	105.8	106.3	109.8
99.8	101.3	103.0	103.2	106.3	106.2	109.5
99.5	100.0	101.3	103.3	105.5	105.7	106.3
97.7	98.2	100.5	102.7	104.3	104.3	104.2
97.5	98.7	100.2	102.8	105.2	103.3	101.9
96.0	97.4	98.0	100.9	104.5	102.5	99.7
95.7	96.9	98.4	101.0	104.0	101.4	99.0
96.4	96.5	97.9	99.4	103.0	99.7	97.0
94.9	95.4	96.7	99.2	101.6	98.1	94.9
94.8	94.9	95.8	98.4	101.3	97.9	93.4
91.5	92.5	95.0	97.6	98.1	95.8	92.5
90.7	92.7	93.7	95.8	97.3	94.0	90.5
90.9	91.9	93.2	95.4	96.6	94.1	91.6
89.8	90.9	91.9	94.3	94.6	92.1	90.6
88.7	89.7	90.5	92.8	93.2	90.3	89.5
92.6	92.6	91.1	93.9	93.4	91.4	90.1
87.0	87.6	88.3	91.1	90.3	88.3	87.8
85.4	86.6	87.3	89.8	88.9	86.8	86.4
87.1	87.3	87.9	88.9	88.8	86.9	86.3
83.7	84.8	85.5	86.7	87.0	85.2	84.3
83.2	84.0	85.0	85.2	86.4	84.2	83.7
81.6	83.1	83.9	84.6	86.1	84.3	83.6
79.3	80.0	81.0	82.4	83.5	82.2	81.2
78.1	77.9	78.9	81.9	82.6	80.9	80.9
76.0	76.0	76.3	79.7	80.6	78.1	79.3
79.7	79.7	79.7	79.3	81.1	79.5	79.7

116

FOLDOUT FRAME

2

*SPL* LOSSLESS DATA AT 100 FOOT RADIUS

ORIGINAL PAGE IS  
OF POOR QUALITY

QCSEE OTW ENGINE

BULK ABSORBER INLET

3000 FT. RUNWAY CONE.

ENGINE WITH TAKE OFF FLAPS

READING NUMBERS = 18 19 20

CONFIGURATION NO = 203

SPEED = 3288. RPM

TEMPERATURE = 73.0 F

RELATIVE HUMIDITY = 76.0 PC

*SIDELINE PLANE* 300M MICROPHONES - LOSSLESS DATA

MIC # 14 15 16 17 18

R 0. 31. 43. 54. 35.

THETA,  $\theta$  90. 90. 90. 90. ~~90~~ 120

Z 106. 91. 86. 81. 65.

DISTANCE 91. 82. 83. 86. 61.

PHI,  $\phi$  0. 22. 31. 39. 35.

INDEX FREQ

1	25.	97.3	89.1	91.7	91.7	92.0
2	32.	92.8	93.3	95.2	96.8	91.9
3	40.	93.3	93.3	95.2	98.5	92.5
4	50.	92.6	96.3	97.0	98.8	94.5
5	63.	92.6	93.9	95.8	97.8	94.5
6	80.	93.3	94.3	97.2	97.7	94.4
7	100.	92.6	93.4	95.4	95.5	94.0
8	125.	93.6	94.6	96.2	97.3	96.0
9	160.	91.5	92.8	94.2	96.0	92.7
10	200.	92.8	93.3	94.9	96.0	92.9
11	250.	92.3	94.1	94.5	95.3	93.4
12	315.	90.8	92.5	93.5	95.4	92.1
13	400.	91.0	91.8	92.9	93.5	90.6
14	500.	91.4	90.8	91.6	93.1	89.6
15	630.	88.7	88.8	90.3	91.1	87.6
16	800.	89.9	89.0	89.8	90.1	87.6
17	1000.	89.0	87.7	88.7	89.1	86.8
18	1250.	87.3	87.1	87.9	88.2	86.0
19	1600.	91.6	89.0	89.6	89.9	87.7
20	2000.	85.1	84.5	85.4	85.9	82.9
21	2500.	85.0	83.9	84.5	85.2	82.0
22	3150.	87.8	86.8	87.3	87.4	83.4
23	4000.	85.2	83.1	84.6	84.6	81.8
24	5000.	86.1	83.5	85.4	85.3	82.1
25	6300.	86.1	82.3	84.9	84.9	82.7
26	8000.	84.4	79.8	83.4	82.9	80.2
27	10000.	84.7	77.4	82.3	81.9	79.1
28	12500.	85.6	74.0	79.5	79.9	77.6
29	16000.	85.6	71.1	78.7	78.0	75.7

FOLDOUT FRAME

QASPL

105.1 105.5 107.1 109.3 105.3

ORIGINAL PAGE IS  
OF POOR QUALITY

S

20

SPEED = 3288. RPM

PERCENT SPEED

86.0

FGK 15786

VE HUMIDITY = 76.0 PC

BAROMETER = 29.39 IN HG

XM11 .609

OUT FRAME 1

117

FOLDOUT FRAME

SS. 46

2



DATA OF 831. SURSET NO. 46. READINGS 18 19 20

QCSEE OTW ENGINE  
BULK ABSORBER INLET  
3000 FT. RUNWAY CONE.  
ENGINE WITH TAKE OFF FLAPS

ORIGINAL PAGE IS  
OF POOR QUALITY

8 PL LOSSLESS ARRAY  
FLYOVER PLANE DATA AT 100.0 FT RADIUS WITH NO ATMOSPHER  
(FCP POWER AND DIRECTIVITY COMPUTA

ENGINE CENTERLINE MICROPHONES

ANGLE,  $\theta$  50. 90.

COMPUTED OASPL 113.1 114.5

BAND FREQUENCY

1	25	103.5	104.4
2	32	105.7	106.7
3	40	106.2	105.9
4	50	104.4	106.9
5	63	102.5	104.7
6	80	100.4	104.4
7	100	99.0	102.0
8	125	98.0	99.9
9	160	94.5	97.7
10	200	94.5	95.2
11	250	94.2	95.6
12	315	94.6	97.1
13	400	94.3	96.6
14	500	92.6	94.9
15	630	91.2	93.5
16	800	91.2	93.4
17	1000	90.8	92.0
18	1250	89.9	90.4
19	1600	95.8	91.8
20	2000	88.8	89.0
21	2500	89.1	88.0
22	3150	94.1	89.9
23	4000	90.5	85.3
24	5000	93.2	87.6
25	6300	88.9	87.8
26	8000	89.1	83.5
27	10000	85.2	82.2
28	12500	83.1	79.9
29	16000	79.5	76.2

118

FOLDOUT FRAME /

CONFIGURATION NO 203  
SPEED = 3288. RPM  
PERCENT SPEED = 86.0

LOSSLESS ARRAY

RADIUS WITH NO ATMOSPHERIC ATTENUATION  
(R AND DIRECTIVITY COMPUTATIONS)

*WAND*

ORIGINAL PAGE IS  
OF POOR QUALITY

118

FOLDOUT FRAME

*2*

SIX DECIBELS HAVE BEEN SUBTRACTED FROM THE ORIGINAL DATA.  
 QC SEE OTW ENGINE  
 BULK ABSORBER INLET  
 3000 FT. RUNWAY CONF.  
 ENGINE WITH TAKE OFF FLAPS

ORIGINAL PAGE IS  
 OF POOR QUALITY

*SPL* LOSSLESS ARRAY  
*FLYOVER PLANE* DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERIC  
 (FOR POWER AND DIRECTIVITY COMPUTATION)

		ANGLE $\theta$	0.	30.	40.	50.	60.	70.	80.	90.	100.	110.	120.
COMPUTED SASPL			108.4	108.3	108.8	109.6	108.9	109.1	109.3	109.9	110.6	113.9	113.9
BAND FREQUENCY													
1	25		96.5	93.2	96.2	97.3	98.3	97.7	100.0	98.8	98.7	104.5	100.3
2	32		90.3	96.7	100.3	99.5	101.2	98.5	100.5	102.8	100.5	104.7	103.7
3	40		91.0	97.8	100.3	101.5	101.8	102.3	100.5	101.5	101.3	104.7	104.8
4	50		94.2	101.0	100.8	102.7	99.2	98.7	99.5	100.3	102.5	106.2	103.7
5	63		94.7	99.5	99.7	100.2	97.0	97.8	97.3	100.2	101.5	104.2	103.5
6	80		96.7	97.2	97.0	95.7	95.3	97.0	99.0	98.5	100.0	102.7	103.9
7	100		96.5	95.0	91.5	94.5	96.2	97.2	97.2	97.7	98.3	101.0	101.8
8	125		94.8	91.2	93.5	95.8	95.0	96.2	96.7	96.7	98.7	100.8	103.2
9	160		94.0	91.7	94.2	94.0	94.0	95.4	94.7	95.0	95.5	99.7	101.9
10	200		93.4	94.0	94.2	94.4	93.9	94.7	95.0	95.2	96.2	99.5	101.9
11	250		91.9	91.5	90.7	92.2	92.0	93.2	94.2	93.7	96.0	98.5	100.4
12	315		89.7	90.4	90.7	91.7	92.9	94.1	92.9	93.1	95.4	97.7	98.9
13	400		88.3	88.6	89.3	90.4	91.4	92.8	93.3	92.8	93.9	96.3	98.6
14	500		87.1	87.6	88.6	90.8	90.5	91.0	89.5	89.3	92.5	95.5	96.1
15	630		86.3	86.7	86.7	88.2	88.0	89.8	89.2	89.5	91.0	93.7	94.5
16	800		86.9	86.4	86.9	89.2	89.1	89.7	89.2	88.9	90.9	92.9	94.4
17	1000		87.8	86.3	86.8	88.9	87.8	89.4	88.1	87.8	90.1	91.6	91.9
18	1250		91.2	87.5	86.8	88.2	86.8	88.5	86.5	86.7	88.3	90.0	90.3
19	1600		101.2	96.2	94.1	95.4	92.6	92.1	90.2	88.1	89.7	91.1	91.7
20	2000		91.8	87.5	86.1	86.8	95.5	85.6	84.3	84.1	86.3	88.0	87.5
21	2500		94.4	90.1	87.8	88.6	86.1	86.8	84.3	83.8	85.9	87.3	86.1
22	3150		99.8	95.9	93.1	93.4	90.6	91.8	87.6	85.8	87.3	86.9	86.1
23	4000		93.5	89.5	87.7	88.6	85.8	86.8	83.5	82.7	84.0	84.1	83.8
24	5000		94.9	91.0	90.7	89.9	87.9	87.7	85.2	83.5	84.2	83.5	83.0
25	6300		92.7	89.2	88.6	87.6	86.4	86.1	83.9	82.6	82.7	81.9	82.6
26	8000		90.1	85.9	86.1	84.8	83.4	83.8	81.1	79.6	79.8	80.0	80.1
27	10000		88.5	84.5	84.3	85.2	81.3	81.6	79.5	76.9	78.0	78.8	79.5
28	12500		85.0	81.4	82.3	82.2	77.5	78.4	75.1	72.8	75.2	77.4	77.8
29	16000		83.0	81.1	82.1	80.7	75.3	77.2	71.7	71.2	72.8	79.3	79.3

FROM THE ORIGINAL DATA.

CONFIGURATION NO 203  
 SPEED = 3288. RPM  
 PERCENT SPEED = 86.0

S S L E S S A R R A Y

RADIUS WITH NO ATMOSPHERIC ATTENUATION  
 AND DIRECTIVITY COMPUTATIONS)

ORIGINAL PAGE IS  
 OF POOR QUALITY

0. 90. 100. 110. 120. 130. 180.

.3 109.9 110.6 113.9 113.8 113.1 113.9

.0 98.8 98.7 104.5 100.3 100.8 100.3

.5 102.8 100.5 104.7 103.7 102.7 103.2

.5 101.5 101.3 104.7 104.8 105.2 107.2

.5 100.3 102.5 106.2 103.7 104.0 107.3

.3 100.2 101.5 104.2 103.5 102.3 106.0

.0 98.5 100.0 102.7 103.5 102.8 103.8

.2 97.7 98.3 101.0 101.8 101.8 101.2

.7 96.7 98.7 100.8 103.2 101.3 98.5

.7 95.0 95.5 99.7 101.9 100.2 97.5

.0 95.2 96.2 99.5 101.9 100.0 96.2

.2 93.7 96.0 98.5 100.4 98.0 94.5

.9 93.1 95.4 97.7 98.9 97.2 92.7

.3 92.8 93.9 96.3 98.6 97.4 91.1

.5 89.3 92.5 95.5 96.1 94.1 90.1

.2 89.5 91.0 93.7 94.5 92.2 88.0

.2 88.9 90.9 92.9 94.4 92.6 88.4

.1 87.8 90.1 91.6 91.9 90.6 87.4

.5 86.7 88.3 90.0 90.3 88.8 87.0

.2 88.1 89.7 91.1 91.7 90.2 87.6

.3 84.1 86.3 88.0 87.5 86.0 84.3

.3 83.8 85.9 87.3 86.1 84.9 83.1

.6 85.8 87.3 86.9 86.1 85.1 83.4

.5 82.7 84.0 84.1 83.8 82.8 81.5

.2 83.5 84.2 83.5 83.0 82.2 80.7

.9 82.6 82.7 81.9 82.6 82.3 80.9

.1 79.6 79.8 80.0 80.1 80.1 78.6

.5 76.9 78.0 78.8 79.5 78.7 78.0

.1 72.8 75.2 77.4 77.8 76.5 76.6

.7 71.2 72.8 79.3 79.3 79.4 79.4

119

FOLDOUT FRAME

2

*JPL* LOSSLESS DATA AT 100 FOOT RADIUS

QCSEE DTW ENGINE

BULK ABSORBER INLET

3000 FT. RUNWAY CONF.

ENGINE WITH TAKE OFF FLAPS

READING NUMBERS = 21 22 23

CONFIGURATION NO = 203

SPEED = 3632. RPM

TEMPERATURE = 72.0 F

RELATIVE HUMIDITY = 76.0 PC

*STOOLING PLANE* 300M MICROPHONES - LOSSLESS DATA

MIC #	14	15	16	17	18
R	0.	31.	43.	54.	35.
THETA, $\theta_s$	90.	90.	90.	90.	<del>90</del> 120
Z	106.	91.	86.	81.	65.
DISTANCE	91.	82.	83.	86.	61.
PHI, $\phi$	0.	22.	31.	39.	35.

INDEX	FREQ					
1	25.	92.1	91.6	94.3	95.0	97.0
2	32.	93.6	94.9	100.7	98.7	96.0
3	40.	96.0	95.9	100.3	99.3	98.0
4	50.	97.0	96.6	102.2	99.0	101.0
5	63.	95.3	97.1	100.5	99.7	99.0
6	80.	95.6	98.8	101.2	99.3	101.5
7	100.	95.8	96.4	100.2	98.2	98.2
8	125.	96.5	97.8	99.5	99.7	99.7
9	160.	94.2	95.9	97.0	98.0	96.7
10	200.	96.7	95.9	98.2	99.0	95.9
11	250.	95.0	95.9	98.0	99.2	96.1
12	315.	94.2	95.5	97.0	97.9	95.1
13	400.	94.9	94.5	96.4	96.7	93.9
14	500.	94.4	94.3	95.6	96.1	93.4
15	630.	92.4	92.2	94.9	94.6	92.6
16	800.	93.1	92.7	94.6	93.8	91.5
17	1000.	91.8	91.2	93.0	93.1	91.2
18	1250.	90.5	89.8	91.5	91.8	90.0
19	1600.	93.0	90.6	92.7	91.9	89.7
20	2000.	90.4	88.7	90.3	89.9	87.2
21	2500.	87.8	86.6	87.7	88.0	84.9
22	3150.	88.8	85.8	87.6	88.2	85.5
23	4000.	88.2	84.8	86.9	86.9	85.1
24	5000.	88.6	84.3	86.4	86.6	84.9
25	6300.	88.8	83.1	86.1	86.8	84.8
26	8000.	87.2	81.0	84.9	85.3	82.9
27	10000.	87.3	78.2	83.7	83.4	81.6
28	12500.	87.4	75.1	80.7	81.5	79.3
29	16000.	88.0	72.6	80.3	79.8	77.6

OASPL 107.9 108.2 111.3 110.5 109.8

FOLDOUT FRAME

120

SPEED = 3632. RPM

PERCENT SPEED 95.0

FGK 19158

HUMIDITY = 76.0 PC

BAROMETER = 29.38 IN HG

XM. .741

53.47

120

FOLDOUT FRAME

2

QC SEE OTW ENGINE  
BULK ABSORBER INLET  
3000 FT. RUNWAY CONF.  
ENGINE WITH TAKE OFF FLAPS

ORIGINAL PAGE IS  
OF POOR QUALITY

SPL LOSSLESS AREA

FLYOVER PLANE DATA AT 100.0 FT RADIUS WITH NO ATMOSPHE  
(FOR POWER AND DIRECTIVITY COMPUT

ENGINE CENTERLINE MICROPHONES

ANGLE,  $\theta$  60. 90.

COMPUTED GASPL 115.4 118.9

BAND FREQUENCY

1	25	101.9	106.4
2	32	103.0	109.2
3	40	103.5	111.7
4	50	104.2	111.7
5	63	104.4	110.0
6	80	102.9	108.7
7	100	102.0	105.9
8	125	101.9	104.5
9	160	99.2	101.9
10	200	97.4	100.2
11	250	96.4	100.9
12	315	97.4	101.3
13	400	98.3	101.3
14	500	96.3	99.2
15	630	95.4	98.9
16	800	95.2	98.4
17	1000	94.8	97.8
18	1250	93.0	95.4
19	1600	93.2	94.4
20	2000	91.2	93.0
21	2500	88.9	92.3
22	3150	88.8	90.9
23	4000	88.8	88.7
24	5000	88.5	88.7
25	6300	85.6	90.1
26	8000	85.0	86.3
27	10000	82.6	84.8
28	12500	80.4	83.3
29	16000	79.0	85.6

121

CONFIGURATION NO 203  
SPEED = 3632. RPM  
PERCENT SPEED = 95.0

SSLESS ARRAY

RADIUS WITH NO ATMOSPHERIC ATTENUATION  
AND DIRECTIVITY COMPUTATIONS)

ORIGINAL PAGE IS  
OF POOR QUALITY

121

FOLDOUT FRAME

2



DATA OF 931. SUBSET NO. 47. READINGS 21 22 23

SIX DECIBELS HAVE BEEN SUBTRACTED FROM THE ORIGINAL DATA.

OCSEE OTW ENGINE  
BULK ABSORBER INLET  
3000 FT. RUNWAY CONF.  
ENGINE WITH TAKE OFF FLAPS

ORIGINAL PAGE IS  
OF POOR QUALITY

SPL LOSSLESS ARPAY

FLYOVER PLANE DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERE  
(FOR POWER AND DIRECTIVITY COMPUTATION)

ANGLE  $\theta$  0. 20. 40. 50. 60. 70. 80. 90. 100. 110. 120.

COMPUTED SASPL 107.7 110.9 111.2 113.3 111.3 111.4 112.1 112.9 114.2 116.7 118.0

BAND FREQUENCY

		0.	20.	40.	50.	60.	70.	80.	90.	100.	110.	120.
1	25	90.2	97.3	97.0	100.8	98.0	100.0	101.3	102.3	102.7	102.0	103.0
2	32	92.7	100.9	101.8	104.7	102.5	102.0	101.8	103.0	103.2	105.7	106.0
3	40	93.0	100.3	103.7	105.2	103.0	103.7	102.3	102.7	104.5	108.5	109.0
4	50	96.3	103.8	104.5	106.5	103.7	101.0	103.7	104.3	106.0	108.3	110.0
5	63	97.3	102.0	102.2	104.2	99.0	100.2	102.5	102.8	104.5	106.0	109.0
6	80	93.7	101.2	99.2	99.7	98.8	100.2	102.0	102.2	103.8	106.3	107.0
7	100	98.2	98.7	95.7	98.0	98.5	99.0	100.2	100.7	102.8	105.3	106.0
8	125	97.8	97.5	96.5	99.3	99.5	99.0	99.7	101.0	102.7	105.2	107.0
9	160	96.7	97.7	97.0	99.2	97.4	98.0	98.5	99.7	100.0	103.7	107.0
10	200	96.0	97.4	97.0	98.0	96.2	97.7	98.0	98.7	99.9	104.4	107.0
11	250	92.9	95.7	94.7	96.0	96.0	96.0	96.9	97.7	99.5	102.5	105.0
12	315	91.7	94.4	94.1	96.1	96.2	96.7	95.6	97.6	98.7	101.1	103.0
13	400	89.0	92.9	93.1	95.1	94.9	95.9	95.9	97.4	97.9	100.3	103.0
14	500	90.0	92.5	92.8	95.5	94.3	94.8	93.3	95.0	97.3	99.0	100.0
15	630	88.7	90.2	91.2	94.2	91.8	93.7	93.2	94.5	95.3	97.7	98.0
16	800	87.9	89.9	91.4	93.7	93.9	93.6	93.6	94.2	95.4	96.9	98.0
17	1000	87.1	89.6	90.1	93.3	92.1	92.8	92.3	93.1	94.6	95.9	97.0
18	1250	88.8	89.2	88.7	91.3	90.2	91.5	91.0	91.3	92.8	94.5	95.0
19	1600	94.2	90.9	90.7	92.6	92.2	92.4	91.1	91.1	93.4	94.7	95.0
20	2000	91.6	88.6	88.5	90.5	89.6	89.8	88.5	89.6	91.5	92.8	93.0
21	2500	86.6	85.4	85.4	88.9	86.6	87.9	86.4	88.2	90.1	90.9	91.0
22	3150	88.9	86.4	85.6	88.1	86.2	87.4	85.7	87.4	89.1	89.4	90.0
23	4000	87.5	84.5	84.1	87.3	85.0	86.3	84.3	86.7	87.6	88.0	88.0
24	5000	86.0	83.2	83.2	85.7	84.0	84.9	83.5	85.2	86.5	86.5	88.0
25	6300	85.1	81.8	82.1	84.3	82.8	83.6	82.6	84.3	85.8	85.9	88.0
26	8000	81.8	79.3	79.6	81.7	79.6	81.2	80.0	81.6	83.3	84.0	85.0
27	10000	80.6	77.2	77.2	80.7	78.1	79.2	78.9	79.4	81.5	83.2	84.0
28	12500	78.2	76.5	76.0	77.7	76.0	76.6	76.3	76.3	78.4	81.2	82.0
29	16000	75.8	79.6	79.7	79.5	79.7	79.6	79.6	79.6	79.4	80.0	81.0

122

FROM THE ORIGINAL DATA.

CONFIGURATION NO 203  
 SPEED = 3632. RPM  
 PERCENT SPEED = 95.0

S S L E S S A R P A Y

RADIUS WITH NO ATMOSPHERIC ATTENUATION  
 AND DIRECTIVITY COMPUTATIONS)

ORIGINAL PAGE IS  
 OF POOR QUALITY

90. 100. 110. 120. 130. 180.

112.9 114.2 116.7 118.7 117.6 119.2

3	102.3	102.7	102.0	103.8	106.3	101.8
8	103.0	103.2	105.7	106.7	106.8	106.8
3	102.7	104.5	108.5	109.0	109.2	107.8
7	104.3	106.0	108.3	110.3	108.8	113.0
5	102.8	104.5	106.0	109.5	108.7	113.0
0	102.2	103.8	106.3	107.5	108.0	110.7
2	100.7	102.8	105.3	106.7	105.8	107.2
7	101.0	102.7	105.2	107.8	106.3	105.5
5	99.7	100.0	103.7	107.0	104.4	104.4
0	98.7	99.9	104.4	107.2	103.4	103.4
9	97.7	99.5	102.5	105.2	101.2	101.2
6	97.6	98.7	101.1	103.9	100.6	99.1
9	97.4	97.9	100.3	103.3	100.4	97.4
3	95.0	97.3	99.0	100.5	97.8	96.5
2	94.5	95.3	97.7	98.8	96.2	94.5
6	94.2	95.4	96.9	98.4	96.1	95.1
3	93.1	94.6	95.9	97.1	94.6	93.8
0	91.3	92.8	94.5	95.3	92.7	92.8
1	91.1	93.4	94.7	95.1	93.2	92.9
5	89.6	91.5	92.8	93.5	91.0	92.3
4	88.2	90.1	90.9	91.7	89.1	90.7
7	87.4	89.1	89.4	90.7	88.1	89.6
3	86.7	87.6	88.0	88.8	87.0	88.0
5	85.2	86.5	86.5	88.5	86.2	87.0
6	84.3	85.8	85.9	88.1	85.9	85.6
0	81.6	83.3	84.0	85.8	84.2	84.0
9	79.4	81.5	83.2	84.7	82.5	83.6
3	76.3	78.4	81.2	82.4	79.5	81.7
6	79.6	79.4	80.0	81.0	79.3	81.5

122

# SPL LOSSLESS DATA AT 100 FOOT RADIUS

ORIGINAL PAGE IS  
OF POOR QUALITY

QCSSE OTW ENGINE

BULK ABSORBER INLET

3000 FT. RUNWAY CONF.

ENGINE WITH TAKE OFF FLAPS

READING NUMBERS = 24 25 26

ENGINE 12

CONFIGURATION NO = 203

SPEED = 0. RPM

TEMPERATURE = 73.0 F

RELATIVE HUMIDITY = 72.0 PC

SIDELINE PLANE

ROOM MICROPHONES - LOSSLESS DATA

MIC # 14 15 16 17 18

R 0. 31. 43. 54. 35.

THETA,  $\theta_3$  90. 90. 90. 90. ~~90~~ 120

Z 106. 91. 86. 81. 65.

DISTANCE 91. 82. 83. 86. 61.

PHI,  $\phi$  0. 22. 31. 39. 35.

INDEX FREQ

1	25.	54.5	58.3	57.0	56.0	54.9
2	32.	55.6	57.6	56.8	57.3	54.4
3	40.	59.3	58.1	59.8	58.3	55.9
4	50.	58.4	59.0	60.8	60.5	55.5
5	63.	59.6	57.8	56.3	58.7	53.9
6	80.	65.4	57.8	64.6	59.2	57.0
7	100.	58.8	58.9	56.7	57.2	54.4
8	125.	59.1	57.8	56.5	56.5	52.5
9	160.	58.9	57.9	61.4	61.2	54.5
10	200.	60.9	54.8	57.5	56.8	53.9
11	250.	58.4	56.1	55.7	57.0	53.2
12	315.	57.2	54.8	54.9	55.0	51.4
13	400.	54.0	55.7	53.4	52.9	50.4
14	500.	53.9	53.3	51.6	52.6	50.6
15	630.	51.7	53.5	51.1	53.1	50.1
16	800.	52.6	53.0	52.1	53.3	52.0
17	1000.	53.8	52.7	53.8	54.0	52.7
18	1250.	53.0	53.4	52.7	52.8	53.0
19	1600.	52.3	51.3	51.2	52.2	51.9
20	2000.	53.9	51.9	51.6	52.4	52.4
21	2500.	54.3	52.7	52.2	53.3	53.1
22	3150.	53.6	52.5	52.6	54.8	52.4
23	4000.	53.8	52.6	54.2	55.1	53.8
24	5000.	53.8	52.9	54.3	56.1	55.0
25	6300.	55.0	53.0	55.5	57.0	56.4
26	8000.	55.1	52.9	56.0	57.7	56.3
27	10000.	57.3	53.0	56.9	58.3	57.3
28	12500.	55.5	48.8	54.3	56.3	55.3
29	16000.	54.8	46.5	53.4	55.3	53.5

OASPL 72.0 70.0 71.5 71.2 68.7

FOLDOUT FRAME 1

123

BACKGROUND NOISE DATA

ENGINE NOT OPERATING ENGINE COOLING AIR ON

ED = 0. RPM

PERCENT SPEED 0.0

FGK 0

UMIDITY = 72.0 PC

BAPOMETER = 29.38 IN HG

XMH 0

ORIGINAL PAGE IS  
OF POOR QUALITY

SS. 48

123

FOLDOUT FRAME

2

AME /

DATA OF 931. SUBSET NO. 48. READINGS 24 25 26

QOSEE OTW ENGINE  
BULK ABSORBER INLET  
3000 FT. RUNWAY CONF.  
ENGINE WITH TAKE OFF FLAPS

ORIGINAL PAGE IS  
OF POOR QUALITY

SPL

LOSSLESS AREA

FLYOVER PLANE

DATA AT 100.0 FT RADIUS WITH NO ATMOSP  
(FOR POWER AND DIRECTIVITY COMPU

ENGINE CENTER LINE MICROPHONES

ANGLE 50. 90.

COMPUTED DASPL 74.8 75.2

BAND FREQUENCY

1	25	63.7	62.4
2	32	62.9	61.5
3	40	65.4	63.0
4	50	65.7	68.5
5	63	64.5	69.3
6	80	68.0	62.8
7	100	60.4	61.7
8	125	57.4	56.5
9	160	55.0	57.5
10	200	58.2	55.7
11	250	58.1	57.3
12	315	58.6	58.6
13	400	55.4	60.1
14	500	55.1	51.9
15	630	54.4	54.0
16	800	56.1	56.1
17	1000	56.3	55.8
18	1250	55.0	55.5
19	1600	52.0	53.4
20	2000	53.0	53.0
21	2500	53.8	54.3
22	3150	53.3	53.4
23	4000	55.9	54.0
24	5000	55.6	55.8
25	6300	56.2	58.5
26	8000	57.5	55.9
27	10000	56.9	57.1
28	12500	55.9	55.0
29	16000	53.7	53.6

124

FOLDOUT FRAME

CONFIGURATION NO 203  
SPEED = 0. RPM  
PERCENT SPEED = 0.0

LOSSLESS ARRAY

7 RADIUS WITH NO ATMOSPHERIC ATTENUATION  
ER AND DIRECTIVITY COMPUTATIONS)

0145

ORIGINAL PAGE IS  
OF POOR QUALITY

124

FOLDOUT FRAME

2

SIX DECIBELS HAVE BEEN SUBTRACTED FROM THE ORIGINAL DATA.

QCSEE OTW ENGINE  
BULK ABSORBER INLET  
3000 FT. RUNWAY CONF.  
ENGINE WITH TAKE OFF FLAPS

ORIGINAL PAGE IS  
OF POOR QUALITY

SPL

LOSSLESS AREA

FLYOVER PLANE

DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERIC  
(FOR POWER AND DIRECTIVITY COMPUTATION)

ANGLE, $\theta$		0.	30.	40.	50.	60.	70.	80.	90.	100.	110.	120.
COMPUTED OASPL		73.4	71.6	69.6	70.7	71.2	69.9	69.4	73.1	71.3	71.2	71.1
BAND FREQUENCY												
1	25	58.7	55.8	59.0	54.0	62.3	55.8	56.7	56.7	54.7	55.3	56.1
2	32	57.3	55.0	53.5	56.2	58.7	57.3	54.5	56.8	56.2	56.0	56.1
3	40	58.3	55.3	56.5	58.2	60.2	58.7	57.8	60.3	57.3	60.2	59.9
4	50	58.5	56.0	58.3	59.5	57.8	57.8	58.7	59.5	58.7	59.8	63.1
5	63	63.5	65.0	61.8	61.0	65.0	62.0	60.5	64.5	61.2	63.0	64.1
6	80	67.3	65.8	60.0	64.8	62.8	61.2	59.8	69.0	67.0	62.8	59.1
7	100	56.5	59.0	60.3	57.8	57.5	55.8	56.3	57.3	57.8	59.8	56.1
8	125	55.8	55.3	55.0	58.8	58.5	59.0	53.8	61.0	57.3	58.8	57.1
9	160	55.8	56.7	53.8	53.7	51.0	55.9	52.3	61.5	58.0	56.4	61.1
10	200	51.8	60.0	52.5	51.9	49.3	56.5	62.0	59.8	56.8	58.5	61.1
11	250	52.8	54.5	49.8	52.5	48.8	53.0	49.3	54.5	54.0	49.0	52.1
12	315	53.6	51.2	52.1	51.7	53.1	51.4	48.1	52.3	51.1	52.1	53.1
13	400	49.6	50.9	51.8	51.6	49.3	50.8	49.1	51.1	49.4	50.3	50.1
14	500	50.9	48.6	49.0	49.5	51.5	49.8	48.4	49.8	49.0	49.1	50.1
15	630	51.3	48.8	48.7	50.5	50.3	48.8	49.8	48.2	49.3	50.8	50.1
16	800	51.1	50.5	48.4	52.7	51.9	50.4	49.4	51.4	49.9	51.2	51.1
17	1000	50.4	51.3	51.3	52.8	52.3	52.4	50.9	51.4	50.9	52.6	53.1
18	1250	51.3	50.6	50.6	53.1	52.7	52.5	50.8	51.8	51.7	53.2	53.1
19	1600	53.4	49.7	49.1	50.1	50.4	49.6	48.2	50.2	50.6	52.1	52.1
20	2000	52.7	49.0	47.7	50.5	50.0	50.0	49.7	49.3	50.8	51.5	51.1
21	2500	54.8	50.9	49.3	51.6	49.9	51.8	50.3	50.8	51.6	52.8	52.1
22	3150	55.4	52.8	50.3	51.3	50.9	51.6	50.1	51.1	52.8	53.3	53.1
23	4000	57.4	53.8	52.0	53.0	51.7	52.2	51.0	52.5	52.8	53.5	53.1
24	5000	60.1	52.6	52.9	52.7	52.1	52.2	51.1	52.6	53.6	53.7	54.1
25	6300	61.2	56.0	52.0	54.5	52.8	52.5	52.9	53.5	55.0	54.7	55.1
26	8000	60.3	52.9	51.4	54.2	51.6	51.9	52.6	52.9	54.3	55.0	55.1
27	10000	62.1	53.8	51.9	55.4	52.6	52.4	53.0	52.5	54.2	56.1	55.1
28	12500	60.4	53.5	52.2	54.8	50.7	50.2	49.6	48.3	51.0	54.1	54.1
29	16000	61.1	55.8	54.8	54.0	49.8	50.4	48.4	48.0	49.9	53.9	55.1

125

FROM THE ORIGINAL DATA.

CONFIGURATION NO 203

SPEED = 0. RPM

PERCENT SPEED = 0.0

LOSSLESS ARRAY

ORIGINAL PAGE IS  
OF POOR QUALITYRADIUS WITH NO ATMOSPHERIC ATTENUATION  
(RADIATION AND DIRECTIVITY COMPUTATIONS)

80.	90.	100.	110.	120.	130.	140.
69.4	73.1	71.3	71.2	71.9	70.2	69.2
56.7	56.7	54.7	55.3	58.7	58.2	56.5
54.5	56.8	56.2	56.0	56.8	58.8	53.8
57.8	60.3	57.3	60.2	59.7	57.8	54.0
58.7	59.5	58.7	59.8	63.0	59.8	55.8
60.5	64.5	61.2	63.0	64.3	62.5	59.8
59.8	69.0	67.0	62.8	59.5	59.0	57.5
56.3	57.3	57.8	59.8	56.8	55.8	54.5
53.8	61.0	57.3	58.8	57.7	57.7	58.7
52.3	61.5	58.0	56.4	61.0	59.0	57.3
62.0	59.8	56.8	58.5	61.0	54.0	56.3
49.3	54.5	54.0	49.0	52.7	54.0	54.0
48.1	52.3	51.1	52.1	53.1	51.7	51.6
49.1	51.1	49.4	50.3	50.9	50.3	50.8
48.4	49.8	49.0	49.1	50.3	49.5	49.8
49.8	48.2	49.3	50.8	50.7	49.2	50.0
49.4	51.4	49.9	51.2	51.6	51.1	52.4
50.9	51.4	50.9	52.6	53.3	53.3	55.6
50.8	51.8	51.7	53.2	53.7	52.5	54.2
48.2	50.2	50.6	52.1	52.7	50.9	53.9
49.7	49.3	50.8	51.5	51.6	51.0	53.5
50.3	50.8	51.6	52.8	52.8	51.6	53.1
50.1	51.1	52.8	53.3	53.4	52.1	53.3
51.0	52.5	52.8	53.5	53.7	52.5	50.2
51.1	52.6	53.6	53.7	54.4	52.2	50.7
52.9	53.5	55.0	54.7	55.5	53.0	51.3
52.6	52.9	54.3	55.0	55.0	52.4	53.0
53.0	52.5	54.2	56.1	55.9	52.7	52.6
49.6	48.3	51.0	54.1	54.3	50.8	50.9
48.4	48.0	49.9	53.9	55.7	52.6	52.5

125

FOLDOUT FRAME

2



# *SPL* LOSSLESS DATA AT 100 FOOT RADIUS

OCSEE OTW ENGINE

BULK ABSORBER INLET

3000 FT. RUNWAY CONF.

ENGINE WITH TAKE OFF FLAPS

ORIGINAL PAGE IS  
OF POOR QUALITY

READING NUMBERS = 27 28 29

CONFIGURATION NO = 203

SPEED = 3112. RPM

TEMPERATURE = 74.0 F

RELATIVE HUMIDITY = 67.0 PC

*SIDELINE PLANE*

ROOM MICROPHONES - LOSSLESS DATA

MIC # 14 15 16 17 18

R 0. 31. 43. 54. 35.

THETA,  $\theta_s$  90. 90. 90. 90. ~~90~~ 120

Z 106. 91. 86. 81. 65.

DISTANCE 91. 82. 83. 86. 61.

PHI,  $\phi$  0. 22. 31. 39. 35.

INDEX FREQ

1	25.	90.1	88.4	90.7	92.7	91.7
2	32.	89.6	92.8	94.0	96.2	91.2
3	40.	90.8	93.3	93.5	96.7	90.4
4	50.	91.1	96.3	97.0	96.8	93.0
5	63.	91.1	92.8	93.3	94.0	93.4
6	80.	92.3	93.9	93.5	94.5	93.2
7	100.	91.0	91.1	93.0	94.2	92.0
8	125.	92.6	92.6	93.4	95.2	93.7
9	160.	90.2	89.9	91.2	92.7	91.1
10	200.	91.2	90.9	91.7	93.5	92.2
11	250.	90.3	91.3	92.5	94.8	92.1
12	315.	89.3	90.5	91.4	92.9	90.2
13	400.	89.5	90.0	90.4	91.5	89.6
14	500.	89.1	89.0	89.3	91.1	88.8
15	630.	87.4	87.3	87.8	88.4	87.3
16	800.	87.6	86.9	86.8	87.8	87.0
17	1000.	86.1	85.6	86.0	86.8	85.8
18	1250.	87.0	85.8	85.9	86.5	85.5
19	1600.	89.2	88.5	87.2	88.1	86.5
20	2000.	83.8	82.8	82.8	83.8	81.6
21	2500.	84.3	82.6	82.8	83.7	81.3
22	3150.	86.9	85.2	85.6	86.4	82.5
23	4000.	84.8	82.0	82.6	83.1	81.0
24	5000.	85.5	81.9	82.8	83.3	81.1
25	6300.	86.1	81.2	83.5	84.0	81.7
26	8000.	84.1	78.7	82.0	82.1	79.8
27	10000.	84.8	77.0	81.0	81.1	78.7
28	12500.	84.8	73.3	78.3	78.9	77.2
29	16000.	84.7	70.6	76.8	76.9	75.3

FOLDOUT FRAME /

OASPL

103.6 104.3 105.0 106.4 103.9

121

ORIGINAL PAGE IS  
OF POOR QUALITY

9  
SPEED = 3112. RPM

PERCENT SPEED 81.0

FGK 13777

HUMIDITY = 67.0 PC

BAROMETER = 29.37 IN HG

XM11 .545

S.S. 49

FRAME /

126

FOLDOUT FRAME

2

DATA OF 831. SURSET NO. 49. READINGS 27 28 29

OCSEE OTW ENGINE  
 RIJLK ABSORBER INLET  
 3000 FT. RUNWAY CONF.  
 ENGINE WITH TAKE OFF FLAPS

*SPL* LOSSLESS ARR

*FLYOVER PLANE* DATA AT 100.0 FT RADIUS WITH NO ATMOS  
 (FOR POWER AND DIRECTIVITY COM)

*ENGINE CENTERLINE MICROPHONES*

ANGLE,  $\theta$  60. 90.

COMPUTED OASPL 112.1 113.0

BAND FREQUENCY

1	25	103.9	104.0
2	32	101.3	104.5
3	40	105.7	105.5
4	50	104.2	104.9
5	63	101.0	103.2
6	80	99.2	102.2
7	100	97.2	100.4
8	125	97.5	97.9
9	160	93.2	94.9
10	200	92.4	93.4
11	250	93.1	94.1
12	315	92.9	94.8
13	400	93.3	93.0
14	500	91.2	92.7
15	630	89.4	91.7
16	800	89.9	90.9
17	1000	89.0	90.3
18	1250	89.5	88.9
19	1600	83.9	90.3
20	2000	89.0	86.2
21	2500	90.1	87.1
22	3150	93.5	89.3
23	4000	91.7	84.5
24	5000	93.1	86.0
25	6300	90.9	87.9
26	8000	90.9	84.2
27	10000	88.8	82.5
28	12500	87.1	81.1
29	16000	83.1	77.3

127

FOLDOUT FRAME

CONFIGURATION NO 203  
SPEED = 3112. RPM  
PERCENT SPEED = 81.0

LOSSLESS ARRAY

RADIUS WITH NO ATMOSPHERIC ATTENUATION  
AND DIRECTIVITY COMPUTATIONS)

127

FOLDOUT FRAME 2

DATA OF 931. SUBSET NO. 49. READINGS 27 28 29

SIX DECIBELS HAVE BEEN SUBTRACTED FROM THE ORIGINAL DATA.  
 OCSEE OTW ENGINE  
 PULK ABSORBER INLET  
 3000 FT. RUNWAY CONF.  
 ENGINE WITH TAKE OFF FLAPS

SPL LOSSLESS ARRAY

ORIGINAL PAGE IS  
 OF POOR QUALITY

FLYOVER PLANE DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERIC  
 (FOR POWER AND DIRECTIVITY COMPUTATION)

ANGLE $\theta_F$		0.	30.	40.	50.	60.	70.	80.	90.	100.	110.	120.
COMPUTED CASPL		109.2	107.8	108.2	109.9	108.6	107.6	107.3	108.6	108.5	112.6	111.
RAND FREQUENCY												
1	25	89.3	94.0	95.3	98.5	98.3	97.3	98.2	100.3	98.8	105.5	100.
2	32	89.2	96.5	98.8	99.8	100.3	99.3	98.7	100.0	99.5	102.5	101.
3	40	89.7	98.2	99.5	102.3	100.7	99.2	98.0	98.8	99.3	102.3	100.
4	50	93.5	99.3	100.5	101.2	99.0	97.7	97.8	98.8	99.2	105.5	102.
5	63	93.3	98.3	97.8	100.0	97.3	94.7	97.0	98.0	97.5	101.5	101.
6	80	94.7	97.2	96.5	95.5	95.2	95.2	97.2	97.5	98.3	102.0	101.
7	100	94.5	95.8	92.8	94.0	94.2	95.7	94.2	96.0	96.7	99.8	98.
8	125	95.2	92.0	92.0	95.5	95.5	94.5	94.5	95.2	97.3	99.3	100.
9	160	93.2	91.4	91.9	94.9	93.0	92.9	92.2	94.4	93.9	97.4	98.
10	200	92.0	93.2	93.7	94.4	93.2	92.9	92.9	94.2	94.2	97.7	99.
11	250	90.2	90.7	90.5	92.0	91.7	91.7	92.0	93.7	92.9	95.5	98.
12	315	88.2	89.2	90.1	92.2	92.2	91.9	91.1	92.6	92.7	94.9	96.
13	400	86.4	88.4	88.6	90.3	90.6	90.3	90.6	92.1	91.4	93.9	97.
14	500	86.1	87.0	88.0	90.5	89.6	88.1	87.6	89.1	90.0	93.1	94.
15	630	85.5	85.3	86.3	87.7	87.3	86.7	86.8	89.0	88.2	90.8	92.
16	800	88.1	86.1	86.4	88.2	88.9	86.9	86.7	87.7	88.6	90.1	93.
17	1000	90.5	85.8	85.8	87.9	87.3	86.6	85.9	86.6	87.8	88.9	90.
18	1250	96.5	90.3	88.7	91.0	88.2	87.0	85.2	86.2	86.5	88.2	89.
19	1600	99.7	95.7	93.9	97.1	93.4	91.1	87.2	88.4	86.9	88.9	90.
20	2000	93.6	88.3	86.8	88.0	85.8	84.3	81.6	83.0	83.8	85.5	86.
21	2500	95.6	90.6	89.4	90.9	88.4	87.1	82.8	83.9	84.1	84.9	85.
22	3150	98.9	94.1	94.3	94.4	92.4	91.8	85.6	88.1	85.1	85.3	85.
23	4000	95.4	89.7	89.5	91.9	88.9	87.5	82.2	84.5	82.5	82.2	83.
24	5000	95.4	89.8	90.4	92.3	89.6	87.4	82.3	84.9	82.1	81.8	83.
25	6300	94.5	88.9	90.0	91.5	89.0	86.9	82.1	84.5	81.7	81.4	83.
26	8000	91.8	86.3	87.7	89.5	86.3	84.5	81.8	81.8	79.2	78.7	81.
27	10000	91.0	85.2	86.3	89.5	85.0	83.3	79.3	80.3	77.7	78.1	80.
28	12500	88.8	83.8	84.2	88.1	81.9	80.8	77.2	77.2	75.1	78.3	78.
29	16000	87.5	83.9	85.0	87.2	81.2	80.4	80.2	80.2	73.1	80.1	80.

128

FROM THE ORIGINAL DATA.

CONFIGURATION NO 203  
 SPEED = 3112. RPM  
 PERCENT SPEED = 81.0

S S L E S S A R R A Y

RADIUS WITH NO ATMOSPHERIC ATTENUATION  
 AND DIRECTIVITY COMPUTATIONS)

ORIGINAL PAGE IS  
 OF POOR QUALITY

0. 90. 100. 110. 120. 130. 180.

.3 108.6 108.5 112.6 111.5 111.0 112.2

.2	100.3	98.8	105.5	100.8	101.7	98.8
.7	100.0	99.5	102.5	101.2	100.8	101.7
.0	98.8	99.3	102.3	100.7	102.8	106.0
.8	98.8	99.2	105.5	102.3	101.7	105.8
.0	98.0	97.5	101.5	101.2	101.0	103.5
.2	97.5	98.3	102.0	101.0	99.2	102.0
.2	96.0	96.7	99.8	98.3	98.3	98.7
.5	95.2	97.3	99.3	100.8	99.3	97.7
.2	94.4	93.9	97.4	98.4	97.5	95.5
.9	94.2	94.2	97.7	99.0	98.5	94.9
.0	93.7	92.9	95.5	98.0	96.4	93.4
.1	92.6	92.7	94.9	96.6	95.1	90.6
.6	92.1	91.4	93.9	97.3	94.8	89.3
.6	89.1	90.0	93.1	94.6	91.8	88.0
.8	89.0	88.2	90.8	92.8	90.2	86.5
.7	87.7	88.6	90.1	93.1	90.2	86.7
.9	86.6	87.8	88.9	90.8	87.9	85.6
.2	86.2	86.5	88.2	89.7	87.2	85.5
.2	88.4	86.9	88.9	90.4	88.6	85.6
.6	83.0	83.8	85.5	86.6	84.0	83.3
.8	83.9	84.1	84.9	85.8	83.1	82.1
.6	88.1	85.1	85.3	85.8	83.6	82.1
.2	84.5	82.5	82.2	83.5	81.5	79.9
.3	84.9	82.1	81.8	83.3	80.6	79.6
.1	84.5	81.7	81.4	83.1	81.4	79.6
.8	81.8	79.2	78.7	81.0	79.3	77.7
.3	80.3	77.7	78.1	80.2	78.0	77.2
.2	77.2	75.1	78.3	78.2	76.4	77.0
.2	80.2	73.1	80.1	80.1	80.3	80.3

SPL

LOSSLESS DATA AT 100 FOOT RADIUS

QCSEE OTW ENGINE

PUK ABSORBER INLET

3000 FT. RUNWAY CONF.

ENGINE WITH TAKE OFF FLAPS

ORIGINAL PAGE IS  
OF POOR QUALITY

READING NUMBERS = 30 31 32

CONFIGURATION NO = 203

SPEED = 2497. RPM

TEMPERATURE = 74.0 F

RELATIVE HUMIDITY = 66.0 PC

SIDELINE PLANE

BOOM MICROPHONES - LOSSLESS DATA

MIC # 14 15 16 17 18

R 0. 31. 43. 54. 35.

THETA,  $\theta_s$  90. 90. 90. 90.  $\times/20$ 

Z 106. 91. 86. 81. 65.

DISTANCE 91. 82. 83. 86. 61.

PHI,  $\phi$  0. 22. 31. 39. 35.

INDEX FREQ

1	25.	31.9	85.1	91.2	88.2	87.0
2	32.	86.4	87.9	89.3	89.2	86.9
3	40.	93.3	85.9	89.2	90.5	87.7
4	50.	95.8	90.8	94.0	93.5	98.7
5	63.	95.6	87.6	90.0	90.8	87.9
6	80.	87.0	88.1	90.3	89.8	90.2
7	100.	95.8	86.4	88.9	88.5	87.7
8	125.	86.6	87.4	89.5	89.0	87.9
9	160.	94.5	85.6	87.9	87.0	85.7
10	200.	86.0	86.6	87.9	88.2	87.4
11	250.	96.0	87.1	88.9	89.0	87.2
12	315.	94.0	85.6	86.4	87.5	85.7
13	400.	93.7	93.6	84.7	85.4	84.1
14	500.	82.7	82.5	83.8	84.2	82.9
15	630.	81.4	80.8	81.4	82.1	81.3
16	800.	81.9	80.2	80.6	81.5	81.1
17	1000.	82.3	80.7	80.7	81.5	81.3
18	1250.	87.7	85.3	83.7	84.5	84.7
19	1600.	79.4	77.3	76.9	77.7	77.5
20	2000.	78.9	77.4	76.6	77.6	76.4
21	2500.	81.2	78.4	77.5	79.0	77.5
22	3150.	79.3	76.2	75.3	77.1	75.9
23	4000.	79.3	76.0	75.6	77.1	75.6
24	5000.	79.5	75.0	76.0	76.5	76.0
25	6300.	81.7	75.4	76.7	77.7	77.2
26	8000.	80.9	74.4	76.9	77.6	76.3
27	10000.	82.5	73.9	77.4	77.8	76.3
28	12500.	81.9	70.1	74.7	75.8	74.2
29	16000.	81.8	67.1	72.8	73.3	72.7

CASPL

93.4 99.0 101.2 101.1 99.4

FOLDOUT FRAME /

129

ORIGINAL PAGE IS  
OF POOR QUALITY

PS

32

SPEED = 2497. RPM

PERCENT SPEED 65.0

FGK 9000

IVE HUMIDITY = 66.0 PC

BAROMETER = 29.37 IN HG

XM11 .406

SA

S.S. 50

OUT FRAME 1

129

FOLDOUT FRAME 2



DATA OF 931. SUBSET NO. 50. READINGS 30 31 32

OCSEE OTW ENGINE  
BULK ABSORBER INLET  
3000 FT. RUNWAY CONF.  
ENGINE WITH TAKE OFF FLAPS

ORIGINAL PAGE IS  
OF POOR QUALITY

SPL LOSSLESS ARRAY

FLYOVER PLANE DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERIC  
(FOR POWER AND DIRECTIVITY COMPUTATION)

# ENGINE CENTER LINE MICROPHONES

ANGLE 60. 90.

COMPUTED CASPL 106.6 106.6

## BAND FREQUENCY

1	25	97.4	99.7
2	32	99.0	99.2
3	40	99.4	97.9
4	50	98.5	97.4
5	63	94.5	97.7
6	80	93.0	93.7
7	100	91.4	93.2
8	125	91.0	91.9
9	160	87.5	88.9
10	200	87.2	88.4
11	250	89.2	89.7
12	315	88.4	89.8
13	400	87.1	87.8
14	500	84.7	86.0
15	630	82.2	85.0
16	800	83.8	84.2
17	1000	85.5	84.6
18	1250	90.7	87.5
19	1600	81.4	79.7
20	2000	83.5	79.5
21	2500	87.1	82.3
22	3150	84.6	79.0
23	4000	85.9	78.6
24	5000	86.5	79.1
25	6300	84.8	79.4
26	8000	86.7	79.0
27	10000	88.9	80.8
28	12500	88.0	79.7
29	16000	82.8	76.6

130

FOLDOUT FRAME 1

CONFIGURATION NO 203  
SPEED = 2497. RPM  
PERCENT SPEED = 65.0

SSLESS ARRAY

RADIUS WITH NO ATMOSPHERIC ATTENUATION  
AND DIRECTIVITY COMPUTATIONS)

ORIGINAL PAGE IS  
OF POOR QUALITY

130

FOLDOUT FRAME 2

DATA OF 931. SURSET NO. 50. READINGS 30 31 32

SIX DECIBELS HAVE BEEN SUBTRACTED FROM THE ORIGINAL DATA.

QCSEE OTW ENGINE  
BULK ABSORBER INLET  
3000 FT. RUNWAY CONF.  
ENGINE WITH TAKE OFF FLAPS

*SPL*

LOSSLESS ARPA

ORIGINAL PAGE IS  
OF POOR QUALITY

*FLYOVER PLANE* DATA AT 100.0 FT RADIUS WITH NO ATMOSPHE  
(FOR POWER AND DIRECTIVITY COMPUT

ANGLE,  $\theta$ , 0. 30. 40. 50. 60. 70. 80. 90. 100. 110. 1

COMPUTED DASPL 103.5 103.1 103.7 104.6 103.5 101.8 103.5 102.1 102.5 103.2 10

BAND FREQUENCY

1	25	95.5	88.7	91.8	93.7	93.2	92.0	95.8	94.5	92.5	94.2	9
2	32	86.0	92.5	93.2	95.2	96.2	93.0	95.5	93.3	94.2	93.2	9
3	40	97.0	91.7	93.3	97.0	96.7	92.0	94.3	91.5	93.2	93.5	9
4	50	98.8	93.0	93.8	97.2	95.0	93.5	94.8	94.2	95.5	95.8	9
5	63	97.7	93.0	93.5	94.7	90.7	89.3	92.3	91.5	92.5	92.8	9
6	80	98.7	92.0	91.0	89.5	88.2	89.7	91.8	90.2	91.0	92.2	9
7	100	89.3	88.2	87.2	88.2	88.0	89.3	88.7	89.5	88.7	90.8	9
8	125	89.3	85.5	86.7	89.9	89.5	87.7	90.2	88.2	89.5	89.7	9
9	160	88.9	86.5	87.9	88.4	86.7	87.5	87.4	87.4	86.9	88.0	9
10	200	87.2	88.2	88.0	89.0	87.4	87.4	88.7	87.0	87.0	89.0	9
11	250	84.5	86.9	86.4	86.4	86.2	87.0	87.2	87.4	87.0	88.2	9
12	315	84.2	84.6	84.7	85.4	85.4	86.9	86.2	85.4	86.2	87.2	8
13	400	81.1	82.4	82.4	84.4	83.4	84.1	85.6	84.6	84.1	84.9	8
14	500	79.0	80.1	81.3	83.3	82.8	82.5	82.3	81.0	82.5	84.3	8
15	630	78.8	79.3	79.5	81.3	79.9	81.2	81.0	80.3	80.7	82.3	8
16	800	93.6	82.1	81.6	82.1	81.7	81.9	80.6	79.7	80.6	81.7	8
17	1000	90.3	87.0	86.8	85.0	83.0	82.5	81.0	79.9	80.8	81.4	8
18	1250	97.8	93.5	93.2	91.2	88.0	86.0	84.8	82.0	82.7	84.5	8
19	1600	98.4	84.9	85.2	81.7	79.9	78.2	77.9	76.2	76.9	78.4	8
20	2000	99.0	85.8	86.3	82.8	81.0	79.2	77.7	75.7	76.7	78.3	7
21	2500	90.4	88.4	88.9	86.4	83.6	82.3	78.9	77.6	78.3	78.8	8
22	3150	87.3	85.6	85.8	82.8	80.9	78.8	79.0	75.1	76.3	76.6	7
23	4000	87.2	85.0	85.4	83.4	81.2	79.3	77.2	75.5	76.4	76.0	7
24	5000	86.3	84.5	85.0	82.6	81.1	78.5	76.3	74.9	75.3	75.1	7
25	6300	87.6	84.9	85.8	82.8	81.4	79.3	77.1	74.9	75.2	75.4	7
26	8000	90.5	86.8	87.7	84.0	81.3	78.9	75.9	73.9	73.6	73.7	7
27	10000	91.1	89.0	90.3	88.2	84.5	82.5	78.8	74.4	73.9	74.3	7
28	12500	86.4	86.0	88.2	86.2	82.3	83.4	78.0	72.0	71.7	72.0	7
29	16000	84.3	84.6	86.4	83.5	78.3	80.4	72.2	70.2	69.9	70.6	7

131

FOLDOUT FRAME /

FROM THE ORIGINAL DATA.

CONFIGURATION NO 203  
 SPEED = 2497. RPM  
 PERCENT SPEED = 65.0

D S S L E S S A R R A Y

ORIGINAL PAGE IS  
 OF POOR QUALITY

RADIUS WITH NO ATMOSPHERIC ATTENUATION  
 AND DIRECTIVITY COMPUTATIONS)

80. 90. 100. 110. 120. 130. 140.  
 102.1 102.5 103.2 104.4 103.7 104.2

5.8	94.5	92.5	94.2	94.7	93.0	93.3
5.5	93.3	94.2	93.2	93.0	93.3	96.7
4.3	91.5	93.2	93.5	95.2	93.2	96.7
4.8	94.2	95.5	95.8	96.2	96.0	96.5
2.3	91.5	92.5	92.8	94.0	93.2	94.8
1.8	90.2	91.0	92.2	93.2	92.2	93.8
8.7	89.5	88.7	90.8	91.5	90.3	91.2
0.2	88.2	89.5	89.7	91.5	92.0	99.7
7.4	87.4	86.9	88.0	90.9	90.7	88.0
8.7	87.0	87.0	89.0	92.2	92.2	87.2
7.2	87.4	87.0	88.2	90.7	90.5	85.5
6.2	85.4	86.2	87.2	88.9	88.4	83.7
5.6	84.6	84.1	84.9	88.6	87.6	82.1
2.3	81.0	82.5	84.3	86.1	84.6	91.1
1.0	80.3	80.7	82.3	84.8	82.7	79.0
0.6	79.7	80.6	81.7	84.7	82.7	79.4
1.0	79.9	80.8	81.4	83.4	81.6	79.3
4.8	82.0	82.7	84.5	95.7	83.8	80.3
7.9	76.2	76.9	78.4	80.6	78.1	76.2
7.7	75.7	76.7	78.3	79.2	77.2	75.3
8.9	77.6	78.3	78.8	80.1	78.6	75.9
9.0	75.1	76.3	76.6	77.4	75.8	74.6
7.2	75.5	76.4	76.0	76.9	75.4	73.5
6.3	74.9	75.3	75.1	76.4	74.6	73.3
7.1	74.9	75.2	75.4	76.6	75.3	73.9
5.9	73.9	73.6	73.7	75.4	74.1	73.1
8.8	74.4	73.9	74.3	75.7	73.9	74.8
8.0	72.0	71.7	72.0	73.0	71.0	72.1
2.2	70.2	69.9	70.6	72.1	70.1	73.5

131

FOLDOUT FRAME

2

# SPL LOSSLESS DATA AT 100 FOOT RADIUS

QCSEE CTW ENGINE

BULK ABSORBER INLET

3000 FT. RUNWAY CONF.

ENGINE WITH TAKE OFF FLAPS

ORIGINAL PAGE IS  
OF POOR QUALITY

READING NUMBERS = 33 34 35

CONFIGURATION NO = 203 SPEED = 1818. RPM

TEMPERATURE = 75.0 F RELATIVE HUMIDITY = 65.0 PC

## SIDELINE PLANE ROOM MICROPHONES - LOSSLESS DATA

MIC #	14	15	16	17	18
R	0.	31.	43.	54.	35.
THETA, $\theta_s$	90.	90.	90.	90.	<del>90.</del> 120
Z	106.	91.	86.	81.	65.
DISTANCE	91.	82.	83.	86.	61.
PHI, $\phi$	0.	22.	31.	39.	35.

INDEX	FREQ					
1	25.	84.4	75.9	78.3	81.3	78.2
2	32.	77.8	79.1	79.7	82.5	78.2
3	40.	78.1	79.3	80.0	82.3	79.7
4	50.	79.1	84.1	85.8	86.2	82.0
5	63.	81.8	82.1	81.2	84.2	81.9
6	80.	78.3	82.6	81.0	81.2	82.9
7	100.	79.3	78.3	78.7	80.5	79.2
8	125.	79.0	78.8	78.9	80.7	79.9
9	160.	75.8	77.4	78.2	79.2	77.1
10	200.	77.7	78.3	78.7	80.5	78.4
11	250.	78.0	78.8	78.9	80.0	78.9
12	315.	77.5	77.5	77.5	78.4	77.1
13	400.	76.7	74.3	74.7	75.5	75.8
14	500.	74.7	75.2	73.6	74.4	75.3
15	630.	76.3	73.9	72.8	73.6	74.1
16	800.	81.4	80.2	78.3	79.6	78.5
17	1000.	77.8	76.1	75.2	75.1	75.7
18	1250.	76.2	73.9	72.5	73.0	73.3
19	1600.	74.4	73.0	71.2	71.4	72.0
20	2000.	72.3	71.4	69.8	69.3	69.2
21	2500.	72.2	68.8	69.5	69.2	69.0
22	3150.	71.6	67.9	67.3	68.6	68.4
23	4000.	71.9	67.3	66.9	68.6	68.1
24	5000.	73.5	70.1	70.0	69.3	70.2
25	6300.	77.4	72.4	73.0	73.0	74.4
26	8000.	75.2	70.1	71.7	72.2	71.6
27	10000.	75.4	67.1	70.4	70.5	70.1
28	12500.	80.5	67.3	71.5	71.8	73.9
29	16000.	74.6	61.6	66.6	66.8	68.2

FOLDOUT FRAME /

OASPL 92.6 91.9 92.1 93.5 91.8

ORIGINAL PAGE IS  
OF POOR QUALITY

ED = 1818. RPM

PERCENT SPEED 47.0

FGK .4632

UMIDITY = 65.0 PC

BAROMETER = 29.37 IN HG

XM11 .271

35.51

AME /

132

FOLDOUT FRAME 2

DATA OF 831. SUBSET NO. 51. READINGS 33 34 35

OCSEE OTW ENGINE  
BULK ABSORBER INLET  
3000 FT. RUNWAY CONF.  
ENGINE WITH TAKE OFF FLAPS

ORIGINAL PAGE IS  
OF POOR QUALITY

SPL

LOSSLESS AKRA

FLYOVER PLANE

DATA AT 100.0 FT RADIUS WITH NO ATMOSPHE  
(FOR POWER AND DIRECTIVITY COMPUT

ENGINE CENTERLINE MICROPHONES

ANGLE,  $\theta$ , 60. 90.

COMPUTED GASPL 99.2 97.9

BAND FREQUENCY

1	25	90.7	90.7
2	32	90.9	90.2
3	40	91.2	86.7
4	50	90.7	90.2
5	63	88.7	89.0
6	80	85.7	85.4
7	100	82.7	82.2
8	125	82.2	81.7
9	160	79.5	79.9
10	200	77.9	79.6
11	250	79.1	80.4
12	315	79.9	80.3
13	400	79.4	78.6
14	500	76.2	76.3
15	630	75.9	75.0
16	800	83.8	81.9
17	1000	80.5	78.3
18	1250	76.9	74.7
19	1600	77.9	73.9
20	2000	75.3	72.3
21	2500	75.5	72.8
22	3150	74.1	70.5
23	4000	74.1	69.7
24	5000	75.3	71.7
25	6300	80.6	76.0
26	8000	86.6	74.5
27	10000	82.4	72.0
28	12500	74.6	71.3
29	16000	75.2	66.6

133

FOLDOUT FRAME /

CONFIGURATION NO 203  
SPEED = 1818. RPM  
PERCENT SPEED = 47.0

SSLESS ARRAY

ORIGINAL PAGE IS  
OF POOR QUALITY

RADIUS WITH NO ATMOSPHERIC ATTENUATION  
AND DIRECTIVITY COMPUTATIONS)

133

FOLDOUT FRAME 2



SIX DECIBELS HAVE BEEN SUBTRACTED FROM THE ORIGINAL DATA.

QCSEE OTW ENGINE  
BULK ABSORBER INLET  
3000 FT. RUNWAY CONF.  
ENGINE WITH TAKE OFF FLAPS

*SPL* LOSSLESS AREA

ORIGINAL PAGE IS  
OF POOR QUALITY

*FLYOVER PLANE* DATA AT 100.0 FT RADIUS WITH NO ATMOSPHE  
(FOR POWER AND DIRECTIVITY COMPUT

ANGLE, <i>θ</i>	30.	40.	50.	60.	70.	80.	90.	100.	110.	1
COMPUTED QASPL 100.1	97.1	96.2	96.3	95.3	94.1	93.1	93.0	93.4	93.4	9
RAND FREQUENCY										
1 25	74.7	81.2	83.7	84.8	86.7	84.5	87.0	85.2	85.8	8
2 32	76.7	83.2	85.2	85.5	86.7	84.3	83.7	84.3	83.0	8
3 40	77.7	84.5	85.8	86.0	85.7	83.2	82.8	82.8	81.7	8
4 50	80.3	85.5	86.7	87.3	86.7	83.3	85.0	85.5	85.8	8
5 63	81.8	85.2	85.3	87.2	84.0	82.0	82.8	83.7	83.8	8
6 80	79.3	83.2	82.5	81.7	90.7	80.3	80.5	80.5	82.7	8
7 100	82.0	81.8	79.7	79.7	78.8	80.8	77.5	78.3	80.5	8
8 125	81.0	79.3	80.3	80.7	80.5	78.3	78.2	78.0	79.7	8
9 160	80.4	78.2	79.2	80.7	78.9	78.4	75.5	76.9	76.7	8
10 200	82.5	79.4	81.7	82.0	79.2	78.7	77.9	77.5	77.5	8
11 250	80.2	78.2	79.2	79.0	78.2	78.7	77.7	78.2	78.2	8
12 315	77.9	77.2	77.6	78.4	77.6	77.2	75.2	76.1	77.4	7
13 400	75.6	73.8	75.1	76.1	74.9	75.8	73.9	74.6	73.6	7
14 500	74.8	73.0	73.6	75.1	74.6	74.0	70.1	71.0	72.0	7
15 630	75.0	74.2	73.5	75.0	73.5	74.2	70.4	70.2	71.9	7
16 800	89.4	85.2	85.4	84.2	81.6	82.7	76.2	75.1	76.9	7
17 1000	88.0	83.0	78.8	79.4	77.4	77.6	72.3	71.4	73.6	7
18 1250	84.0	81.1	77.3	76.3	74.8	74.5	69.2	69.3	70.5	7
19 1600	87.1	84.2	81.1	77.9	75.1	76.1	68.9	68.7	70.1	7
20 2000	84.3	80.7	78.2	75.2	73.2	74.3	66.3	66.8	69.0	7
21 2500	82.8	82.1	79.3	76.6	73.9	75.9	66.4	66.8	68.1	7
22 3150	81.4	80.5	78.3	74.8	73.3	75.8	65.3	65.9	67.3	6
23 4000	82.2	79.5	78.4	75.2	73.4	76.2	64.2	65.7	66.7	6
24 5000	81.7	79.2	76.5	74.1	73.1	76.1	64.8	66.5	67.3	6
25 6300	93.7	85.2	83.3	78.9	77.7	79.0	68.1	67.9	69.6	7
26 8000	94.3	89.5	84.9	84.8	81.6	79.3	70.6	66.7	67.0	6
27 10000	84.0	81.8	79.5	80.8	78.9	78.3	69.8	64.5	65.6	6
28 12500	81.6	76.4	74.3	76.3	73.0	75.6	65.2	63.3	66.0	7
29 16000	85.0	79.1	77.8	76.9	71.9	72.4	62.2	60.0	61.4	6

134

FROM THE ORIGINAL DATA.

CONFIGURATION NO 203  
 SPEED = 1818. RPM  
 PERCENT SPEED = 47.0

## LOSSLESS ARRAY

RADIUS WITH NO ATMOSPHERIC ATTENUATION  
 R AND DIRECTIVITY COMPUTATIONS)

ORIGINAL PAGE IS  
 OF POOR QUALITY

80.	90.	100.	110.	120.	130.	180.
93.1	93.0	93.4	93.4	95.0	94.1	93.3
7.0	85.2	85.8	83.0	84.7	85.5	84.0
3.7	84.3	83.0	81.5	83.0	82.0	83.2
2.8	82.8	81.7	83.2	84.0	84.0	83.5
5.0	85.5	85.8	87.5	88.5	86.2	84.2
2.8	83.7	83.8	84.2	86.2	84.8	84.8
0.5	80.5	82.7	82.3	83.0	81.7	84.5
7.5	78.3	80.5	79.5	80.2	79.5	82.8
8.2	78.0	79.7	79.5	81.2	81.2	78.7
5.5	76.9	76.7	77.4	80.0	79.7	77.0
7.9	77.5	77.5	78.7	81.4	82.0	77.2
7.7	78.2	78.2	78.7	81.2	80.9	76.2
5.2	76.1	77.4	77.4	78.6	78.9	74.1
3.9	74.6	73.6	74.4	77.6	77.8	72.1
0.1	71.0	72.0	74.0	75.0	74.6	70.6
0.4	70.2	71.9	72.0	74.7	73.2	69.4
6.2	75.1	76.9	76.1	79.4	76.9	74.7
2.3	71.4	73.6	72.8	76.4	74.8	72.8
9.2	69.3	70.5	71.7	74.2	72.8	68.7
8.9	68.7	70.1	70.4	72.9	71.6	66.7
5.3	66.8	69.0	69.0	71.2	69.8	65.5
5.4	66.8	68.1	68.4	70.6	69.1	65.3
5.3	65.9	67.3	66.8	69.3	68.1	64.3
4.2	65.7	66.7	66.5	68.4	67.4	63.7
1.8	66.5	67.3	67.3	69.3	67.6	65.0
3.1	67.9	69.6	69.9	72.6	71.3	69.1
0.6	66.7	67.0	67.2	69.3	67.8	66.2
0.8	64.5	65.6	65.5	68.0	66.3	65.9
1.2	63.3	66.0	68.1	70.8	68.6	70.7
0.2	60.0	61.4	64.0	66.8	65.0	68.8

134

FOLDOUT FRAME 2

# SPL LOSSLESS DATA AT 100 FOOT RADIUS

GCSEE OTW ENGINE

PULK ABSORBER INLET

3000 FT. RUNWAY CONF.

ENGINE WITH TAKE OFF FLAPS

READING NUMBERS = 36 37

CONFIGURATION NO = 203

SPEED = 3653. RPM

TEMPERATURE = 74.0 F

RELATIVE HUMIDITY = 68.0 PC

## FLYOVER PLANE BOOM MICROPHONES - LOSSLESS DATA

MIC #	14	15	16	17	18
R	0.	31.	43.	54.	35.
THETA, $\theta$	90.	90.	90.	90.	<del>90.</del> 120
Z	106.	91.	86.	81.	65.
DISTANCE	91.	82.	83.	86.	61.
PHI, $\phi$	0.	22.	31.	39.	35.

INDEX	FREQ					
1	25.	91.6	90.0	91.8	98.9	81.2
2	32.	91.6	94.3	97.1	101.4	80.0
3	40.	93.1	95.5	97.6	103.4	86.0
4	50.	95.9	97.0	100.6	101.7	76.0
5	63.	97.1	95.5	97.8	100.9	92.2
6	80.	94.6	96.3	96.8	101.2	85.0
7	100.	95.6	95.3	95.6	98.9	79.5
8	125.	95.9	97.5	97.4	99.7	82.7
9	150.	94.4	95.3	94.4	97.7	78.5
10	200.	95.9	95.0	96.6	98.7	78.2
11	250.	95.4	96.8	96.1	98.2	75.2
12	315.	93.9	94.0	94.9	97.9	73.7
13	400.	94.7	94.6	93.4	97.0	74.5
14	500.	94.2	94.3	93.4	96.0	70.8
15	630.	92.0	92.1	91.9	94.3	70.9
16	800.	92.5	91.9	91.5	93.3	69.8
17	1000.	91.3	90.7	90.0	92.6	67.8
18	1250.	90.3	89.7	90.0	91.8	67.8
19	1600.	94.1	91.5	91.6	92.6	67.9
20	2000.	90.9	88.5	89.4	90.7	67.9
21	2500.	88.0	86.3	86.2	88.2	68.0
22	3150.	89.4	86.7	87.0	88.3	68.0
23	4000.	89.5	85.1	86.2	87.5	68.1
24	5000.	89.3	84.3	86.1	87.0	68.3
25	6300.	89.1	83.6	86.2	87.6	68.6
26	8000.	87.7	81.4	84.8	85.9	69.0
27	10000.	87.4	78.9	83.6	84.5	69.6
28	12500.	87.3	75.2	80.6	81.8	70.6
29	16000.	87.5	72.8	79.0	80.0	72.1

OASPL

107.7 107.6 108.6 111.8 92.5

FOLDOUT FRAME /

EFD = 3653. RPM

PERCENT SPEED 95.0

HUMIDITY = 68.0 PC

BAROMETER = 29.38 IN HG

FGK 18907  
XMH .719

SS. 52

135

ME /

FOLDOUT FRAME 2

DATA OF 931. SUBSET NO. 52. READINGS 36 37 38

QCSEE OTW ENGINE  
BULK ABSORBER INLET  
3000 FT. RUNWAY CONF.  
ENGINE WITH TAKE OFF FLAPS

ORIGINAL PAGE IS  
OF POOR QUALITY

SPL LOSSLESS ARRAY

FLYOVER PLANE

DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERE  
(FOR POWER AND DIRECTIVITY COMPUTATION)

ENGINE CENTERLINE MICROPHONES

ANGLE,  $\theta$ , 60. 90.

COMPUTED CASPL 115.6 117.2

BAND FREQUENCY

1	25	105.0	106.8
2	32	108.0	108.3
3	40	109.0	108.5
4	50	108.3	108.5
5	63	103.3	108.8
6	80	103.0	106.8
7	100	101.5	105.3
8	125	101.0	103.8
9	160	98.0	101.0
10	200	95.8	98.8
11	250	96.6	98.6
12	315	97.1	100.1
13	400	97.9	99.6
14	500	97.4	98.9
15	630	95.7	97.2
16	800	95.5	97.2
17	1000	94.3	96.8
18	1250	93.6	95.1
19	1600	96.4	94.7
20	2000	93.0	93.3
21	2500	89.6	91.9
22	3150	90.8	91.5
23	4000	90.0	89.8
24	5000	90.2	89.7
25	6300	87.5	91.3
26	8000	87.0	87.2
27	10000	84.7	85.2
28	12500	82.6	83.6
29	16000	86.2	86.1

136

FOLDOUT FRAME

CONFIGURATION NO 203  
SPEED = 3653. RPM  
PERCENT SPEED = 95.0

LOSSLESS ARRAY

T RADIUS WITH NO ATMOSPHERIC ATTENUATION  
ER AND DIRECTIVITY COMPUTATIONS)

ORIGINAL PAGE IS  
OF POOR QUALITY

136

FOLDOUT FRAME

2

DATA OF 931. SUBSET NO. 52. READINGS 36 37 ~~35~~

SIX DECIBELS HAVE BEEN SUBTRACTED FROM THE ORIGINAL DATA.  
 OF SEE QTW ENGINE  
 BULK ABSORBER INLET  
 3000 FT. RUNWAY CONF.  
 ENGINE WITH TAKE OFF FLAPS

SPL LOSSLESS ARRAY

ORIGINAL PAGE IS  
 OF POOR QUALITY

*Flyover Plane* DATA AT 100.0 FT RADIUS WITH NO ATMOSPHER  
 (FOR POWER AND DIRECTIVITY COMPUTA

ANGLE $\theta$		0.	30.	40.	50.	60.	70.	80.	90.	100.	110.	120.
COMPUTED DASPL		109.0	109.9	111.5	112.4	112.2	111.2	112.0	113.0	114.2	115.6	117.0
BAND FREQUENCY												
1	25	92.0	95.3	95.8	99.0	100.3	97.0	101.5	102.8	102.8	103.5	104.0
2	32	95.0	97.3	100.8	102.0	103.3	101.3	104.8	103.0	103.3	103.0	108.0
3	40	95.0	102.0	104.5	105.5	104.8	103.3	102.0	103.0	105.3	106.5	109.0
4	50	98.5	102.8	104.5	104.8	104.5	102.5	102.0	104.3	105.3	106.8	109.0
5	63	98.0	101.8	103.8	102.8	101.3	97.8	101.8	103.8	104.8	106.0	107.0
6	80	97.8	100.3	98.8	99.0	99.0	100.8	101.5	102.3	103.3	104.8	106.0
7	100	99.3	95.5	95.3	98.8	98.8	99.5	99.5	101.3	102.5	103.8	105.0
8	125	97.0	94.8	96.5	99.5	99.5	99.3	99.3	100.5	102.8	104.3	105.0
9	160	96.5	94.5	96.8	97.8	97.5	97.8	98.3	98.8	99.5	102.5	105.0
10	200	95.8	95.5	96.3	97.5	96.8	97.3	97.3	98.8	100.3	103.3	105.0
11	250	93.0	94.0	94.3	96.0	95.5	95.8	97.3	97.8	99.8	100.3	104.0
12	315	92.1	92.8	93.3	95.6	96.1	96.8	96.1	96.8	98.6	100.6	102.0
13	400	91.6	91.8	92.1	94.8	94.6	95.6	95.8	97.6	98.1	99.8	102.0
14	500	91.1	91.4	92.1	94.9	94.6	94.1	92.1	95.1	96.9	99.4	99.0
15	630	90.4	89.9	91.4	93.2	92.4	93.4	91.9	95.2	95.9	98.2	97.0
16	800	89.0	90.0	91.0	93.5	93.7	93.5	92.5	94.0	95.7	97.0	97.0
17	1000	88.8	88.8	90.0	93.0	93.5	93.3	92.0	93.8	95.5	96.0	96.0
18	1250	92.1	89.3	89.6	92.1	91.8	91.8	90.3	91.3	93.6	94.6	94.0
19	1600	98.7	93.4	94.7	94.9	93.9	92.7	90.4	91.4	94.7	95.2	94.0
20	2000	95.2	90.5	92.0	92.5	91.7	91.0	89.0	89.7	92.7	93.2	93.0
21	2500	90.6	86.3	87.1	89.1	88.1	87.8	86.3	88.3	90.3	91.3	90.0
22	3150	94.3	88.5	89.8	89.8	88.5	88.8	86.0	87.8	90.0	89.8	89.0
23	4000	91.5	86.9	87.8	88.8	87.3	87.3	84.5	87.3	88.0	87.8	89.0
24	5000	91.4	85.9	87.4	87.2	85.9	86.2	83.9	86.2	87.2	86.4	88.0
25	6300	89.8	84.3	86.0	85.8	85.2	85.3	83.3	85.3	86.3	86.3	88.0
26	8000	97.0	81.5	83.2	82.7	82.2	83.0	80.5	82.5	83.5	84.2	86.0
27	10000	85.7	79.7	81.2	81.2	79.7	80.9	79.2	80.7	82.2	83.5	84.0
28	12500	82.9	77.5	78.7	79.2	77.3	78.5	76.6	77.0	79.0	81.5	82.0
29	16000	81.7	80.1	79.9	79.9	80.1	80.0	80.2	80.1	79.9	80.5	80.0

137

FOLDOUT FRAME /

ED FROM THE ORIGINAL DATA.

CONFIGURATION NO 203  
SPEED = 3653. RPM  
PERCENT SPEED = 95.0

LOSSLESS ARRAY

FT RADIUS WITH NO ATMOSPHERIC ATTENUATION  
POWER AND DIRECTIVITY COMPUTATIONS)

ORIGINAL PAGE IS  
OF POOR QUALITY

80. 90. 100. 110. 120. 130. 180.  
112.0 113.0 114.2 115.6 117.6 116.5 116.8

101.5	102.8	102.8	103.5	104.3	103.0	103.5
104.8	103.0	103.3	103.0	108.3	106.0	105.8
102.0	103.0	105.3	106.5	109.0	107.8	108.0
102.0	104.3	105.3	106.8	109.0	107.8	110.3
101.8	103.8	104.8	106.0	107.3	107.3	110.3
101.5	102.3	103.3	104.8	106.8	106.5	107.8
99.5	101.3	102.5	103.8	105.0	105.0	104.0
99.3	100.5	102.8	104.3	105.8	105.8	102.0
98.3	98.8	99.5	102.5	105.3	103.8	100.5
97.3	98.8	100.3	103.3	105.0	102.8	99.3
97.3	97.8	99.8	100.3	104.8	101.0	97.0
96.1	96.8	98.6	100.6	102.8	98.6	95.3
95.8	97.6	98.1	99.8	102.6	99.3	93.6
92.1	95.1	96.9	99.4	99.6	97.1	92.4
91.9	95.2	95.9	98.2	97.9	96.2	89.9
92.5	94.0	95.7	97.0	97.5	95.7	90.5
92.0	93.8	95.5	96.0	96.0	94.0	88.8
90.3	91.3	93.6	94.6	94.6	92.6	88.1
90.4	91.4	94.7	95.2	94.9	93.2	88.2
89.0	89.7	92.7	93.2	93.0	91.2	86.5
86.3	89.3	90.3	91.3	90.8	88.6	84.6
86.0	87.8	90.0	89.8	89.8	88.3	84.3
84.5	87.3	88.0	87.8	89.0	87.5	83.3
83.9	86.2	87.2	86.4	88.2	86.4	82.7
83.3	85.3	86.3	86.3	88.0	86.3	82.0
80.5	82.5	83.5	84.2	86.0	84.5	79.7
79.2	80.7	82.2	83.5	84.7	82.7	78.7
76.6	77.0	79.0	81.5	82.2	79.9	77.1
80.2	80.1	79.9	80.5	80.9	79.8	80.1

137

FOLDOUT FRAME

2



**SPL**

LOSSLESS DATA AT 100 FOOT RADIUS

OCSEF CTW ENGINE

BULK-ABSORBER INLET

3000 FT. RUNWAY CONF.

ENGINE WITH APPROACH FLAPS

ORIGINAL PAGE IS  
OF POOR QUALITY

READING NUMBERS = 38 39 40

CONFIGURATION NO = 103

SPEED = 2502. RPM

TEMPERATURE = 78.0 F

RELATIVE HUMIDITY = 63.0 PC

**SIDELINE PLANE**

300M MICROPHONES - LOSSLESS DATA

MIC # 14 15 16 17 18

R 0. 31. 43. 54. 35.

THETA,  $\theta$ , 90. 90. 90. 90. ~~90~~ 120

Z 106. 91. 86. 81. 65.

DISTANCE 91. 82. 83. 86. 61.

PHI,  $\phi$  0. 22. 31. 39. 35.

INDEX FREQ

1	25.	37.8	86.4	92.2	89.7	85.0
2	32.	89.3	88.8	92.5	91.5	86.9
3	40.	89.0	87.6	93.2	92.5	86.7
4	50.	89.0	90.9	95.2	92.3	90.2
5	63.	87.8	87.1	91.5	89.3	89.7
6	80.	91.0	88.4	91.2	89.8	91.2
7	100.	90.3	87.9	91.4	90.7	98.9
8	125.	88.1	86.4	89.7	88.8	87.9
9	150.	85.2	86.3	89.0	89.3	87.1
10	200.	86.7	86.4	90.0	89.7	97.1
11	250.	86.7	87.4	89.0	90.0	86.2
12	315.	86.5	88.0	89.2	89.0	96.7
13	400.	84.7	86.0	87.9	87.5	85.4
14	500.	83.2	84.8	86.6	86.4	83.8
15	630.	82.1	81.5	83.3	83.6	82.5
16	800.	82.8	80.2	81.8	82.5	81.5
17	1000.	82.0	79.9	81.3	81.7	80.8
18	1250.	84.5	81.8	83.4	81.7	81.4
19	1600.	79.2	76.3	76.9	77.9	76.9
20	2000.	78.5	75.9	76.8	77.1	75.6
21	2500.	80.2	75.9	77.0	77.2	75.5
22	3150.	79.0	74.0	75.5	75.6	74.7
23	4000.	79.1	73.7	75.3	75.3	75.1
24	5000.	79.7	72.9	75.0	75.3	76.0
25	6300.	80.7	72.7	75.8	75.7	77.2
26	8000.	81.0	72.2	75.7	75.7	75.8
27	10000.	82.2	71.8	76.0	77.2	74.5
28	12500.	81.2	67.5	73.0	73.4	72.0
29	16000.	81.2	64.1	71.0	71.1	70.9

FOLDOUT FRAME /

OASPL

100.3 99.4 102.9 101.8 99.7

ORIGINAL PAGE IS  
OF POOR QUALITY

PEED = 2502. RPM

PERCENT SPED 65.0

FGK 8785

HUMIDITY = 63.0 PC

BAROMETER = 29.32 IN HG

XM11 .410

FRAME 1

FOLDOUT FRAME 2 S.S. 53

DATA OF 906. SUBSET NO. 53. READINGS 38 39 40

OCSEE OTW ENGINE  
BULK-ABSORBER INLET  
3000 FT. RUNWAY CONF.  
ENGINE WITH APPROACH FLAPS

ORIGINAL PAGE IS  
OF POOR QUALITY

SPL

LOSSLESS ARRAY

FLYOVER PLANE DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERIC  
(FOR POWER AND DIRECTIVITY COMPUTATION)

ENGINE CENTERLINE MICROPHONES

ANGLE  $\theta$  60. 90.

COMPUTED OASPL 108.0 107.3

BAND FREQUENCY

1	25	101.0	99.4
2	32	100.2	99.7
3	40	99.7	99.2
4	50	99.4	99.5
5	63	94.9	95.9
6	80	96.9	94.7
7	100	95.7	95.0
8	125	91.5	91.2
9	160	87.2	89.4
10	200	87.9	89.6
11	250	88.6	90.9
12	315	83.8	90.4
13	400	83.0	90.3
14	500	85.5	88.3
15	630	82.7	86.0
16	800	83.9	84.6
17	1000	84.3	83.3
18	1250	90.9	84.6
19	1600	81.9	79.5
20	2000	82.5	78.2
21	2500	86.0	79.5
22	3150	83.0	77.8
23	4000	83.9	76.4
24	5000	85.6	76.8
25	6300	84.7	78.9
26	8000	85.1	75.7
27	10000	90.9	78.7
28	12500	85.6	76.7
29	16000	81.0	75.6

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FOLDOUT FRAME

CONFIGURATION NO 103  
SPEED = 2502. RPM  
PERCENT SPEED = 65.0

LESS APPAY

DIUS WITH NO ATMOSPHERIC ATTENUATION  
(NO DIRECTIVITY COMPUTATIONS)

ORIGINAL PAGE IS  
OF POOR QUALITY

139

FOLDOUT FRAME

2

SIX DECIPELS HAVE BEEN SUBTRACTED FROM THE ORIGINAL DATA.

QCSEE OTW ENGINE  
BULK-ABSORBER INLET  
3000 FT. RUNWAY CONF.  
ENGINE WITH APPROACH FLAPS

SPL LOSSLESS ARRAY

ORIGINAL PAGE IS  
OF POOR QUALITY

FLYOVER PLANE DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERIC  
(FOR POWER AND DIRECTIVITY COMPUTATION)

ANGLE $\theta$	0.	20.	40.	50.	60.	70.	80.	90.	100.	140.	150.
COMPUTED GASPL	103.0	104.1	104.6	104.3	104.2	102.0	102.1	102.4	103.2	114.4	107.0
BAND FREQUENCY											
1	25	91.2	94.7	94.0	94.0	92.5	93.2	93.8	94.7	95.0	106.3
2	32	92.8	96.2	97.2	96.5	96.2	94.5	94.3	94.3	94.8	109.3
3	40	93.7	95.3	96.7	96.5	94.7	92.2	91.8	92.3	93.2	103.8
4	50	94.0	96.0	96.0	95.3	94.5	91.5	93.0	93.7	95.2	108.0
5	63	92.7	92.2	92.2	89.9	88.2	89.7	91.5	91.7	92.2	104.5
6	80	91.3	89.0	87.3	88.2	90.8	91.2	90.3	89.8	91.2	99.8
7	100	89.2	89.0	89.8	90.5	91.7	89.5	89.2	90.3	89.2	98.2
8	125	86.5	85.8	90.0	90.0	88.2	87.5	88.3	87.5	89.8	95.8
9	160	85.7	87.5	88.0	86.4	86.4	86.4	86.9	86.5	88.0	92.9
10	200	86.0	87.7	87.0	87.2	86.9	87.2	88.4	88.0	90.2	95.9
11	250	84.2	85.4	85.9	86.5	87.5	87.4	87.5	89.0	89.9	94.0
12	315	83.4	84.4	85.4	85.6	86.1	86.4	85.6	86.4	87.2	91.1
13	400	79.6	84.3	83.1	83.4	83.9	84.6	84.6	85.8	86.8	90.1
14	500	77.0	80.0	80.0	81.1	82.8	82.6	82.6	83.0	83.6	87.1
15	630	76.4	79.7	79.4	79.7	80.4	81.4	80.7	81.2	81.0	86.2
16	800	79.4	79.4	78.9	80.1	80.6	81.1	79.4	79.7	79.9	82.5
17	1000	84.8	82.3	81.3	80.6	80.6	80.3	79.1	78.6	78.3	81.6
18	1250	81.7	82.9	87.7	85.7	85.7	84.4	80.0	80.5	79.0	83.1
19	1600	85.9	84.6	83.3	80.8	79.4	78.3	75.9	75.8	75.1	79.2
20	2000	87.2	85.4	84.5	82.7	80.2	78.5	75.9	75.0	74.2	80.5
21	2500	87.8	87.8	87.6	85.3	82.3	80.8	76.5	76.0	74.5	79.1
22	3150	84.6	86.0	85.5	83.6	80.8	79.1	75.0	73.5	72.8	80.3
23	4000	84.9	85.9	85.9	83.7	81.1	80.1	74.9	73.1	72.4	80.7
24	5000	83.8	85.6	86.0	84.0	81.1	79.5	74.6	72.8	72.0	80.6
25	6300	86.1	85.4	86.6	84.9	82.2	80.4	75.6	72.7	72.0	83.8
26	8000	87.0	87.1	88.4	85.0	81.9	80.1	75.2	72.2	70.0	84.0
27	10000	86.4	89.1	91.1	91.2	87.7	84.9	79.2	73.9	70.3	84.5
28	12500	81.0	85.0	87.1	85.9	83.3	81.0	76.4	69.6	66.2	86.3
29	16000	79.0	81.0	82.3	81.3	77.5	76.6	71.4	69.7	70.1	90.1

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FROM THE ORIGINAL DATA.

CONFIGURATION NO 103  
 SPEED = 2502. RPM  
 PERCENT SPEED = 65.0

LESSS ARPAY

RADIUS WITH NO ATMOSPHERIC ATTENUATION  
 AND DIRECTIVITY COMPUTATIONS)

ORIGINAL PAGE IS  
 OF POOR QUALITY

0. 90. 100. 140. 150. 160. 180.

1 102.4 103.2 114.4 107.9 110.0 109.3

8 94.7 95.0 106.3 97.3 98.8 98.3

3 94.3 94.8 109.3 100.7 102.2 102.7

8 92.3 93.2 103.8 101.5 104.0 102.3

0 93.7 95.2 108.0 100.3 102.8 101.0

5 91.7 92.2 104.5 99.2 100.7 99.3

3 89.8 91.2 99.8 96.3 98.2 98.2

2 90.3 89.2 98.2 93.7 96.3 96.5

3 87.5 89.8 95.8 90.3 93.5 94.0

9 86.5 88.0 92.9 87.7 91.5 92.4

4 88.0 90.2 95.9 86.9 91.4 93.4

5 89.0 89.9 94.0 85.5 88.9 91.7

6 96.4 87.2 91.1 82.7 87.4 90.1

6 85.8 86.8 90.1 82.8 86.4 88.6

6 83.0 83.6 87.1 80.6 85.1 85.8

7 81.2 81.0 86.2 79.0 83.4 84.5

4 79.7 79.9 82.5 79.4 82.7 84.2

1 78.6 78.3 81.6 79.5 82.1 83.3

0 80.5 79.0 83.1 81.4 83.0 82.0

9 75.8 75.1 79.2 78.6 79.6 79.9

9 75.0 74.2 80.5 76.7 78.7 78.9

5 76.0 74.5 79.1 80.1 79.6 78.6

0 73.5 72.8 80.3 77.1 77.8 76.3

9 73.1 72.4 80.7 77.4 77.1 76.1

6 72.8 72.0 80.6 75.9 76.1 74.6

6 72.7 72.0 83.8 75.9 75.9 74.4

2 72.2 70.0 84.0 74.3 74.5 73.2

2 73.9 70.3 84.5 74.2 74.6 74.2

4 69.6 66.2 86.3 69.8 71.8 72.8

4 69.7 70.1 90.1 71.0 72.4 75.1

140

FOLDOUT FRAME 2

# SPL LOSSLESS DATA AT 100 FOOT RADIUS

DCSEE OTW ENGINE

BULK-ABSORBER INLET

3000 FT. RUNWAY CONF.

ENGINE WITH APPROACH FLAPS

ORIGINAL PAGE IS  
OF POOR QUALITY

READING NUMBERS = 41 42 43

CONFIGURATION NO = 103

SPEED = 3118. RPM

TEMPERATURE = 79.0 F

RELATIVE HUMIDITY = 60.0 PC

*SIDELINE PLANE*

BOOM MICROPHONES - LOSSLESS DATA

MIC # 14 15 16 17 18

R 0. 31. 43. 54. 35.

THETA,  $\theta_s$  90. 90. 90. 90. ~~90~~ 120

Z 106. 91. 86. 91. 65.

DISTANCE 91. 82. 83. 86. 61.

PHI,  $\phi$  0. 22. 31. 39. 35.

INDEX FREQ

1	25.	91.3	90.8	94.8	94.5	90.7
2	32.	93.3	94.9	95.7	99.5	93.0
3	40.	93.4	93.1	97.3	93.3	93.9
4	50.	96.5	95.9	99.0	97.7	97.4
5	63.	95.3	94.9	95.0	95.7	96.4
6	80.	95.0	94.1	94.3	96.2	95.5
7	100.	94.5	94.1	94.2	96.0	96.2
8	125.	95.0	94.3	95.0	97.0	95.0
9	160.	92.7	93.3	95.4	96.2	93.9
10	200.	93.8	93.9	95.9	97.2	94.4
11	250.	92.5	93.8	94.7	96.5	93.4
12	315.	92.3	94.6	95.2	96.5	93.4
13	400.	92.0	93.0	94.9	94.7	91.9
14	500.	91.4	91.7	93.4	93.7	90.4
15	630.	89.9	89.5	90.9	91.4	89.0
16	800.	89.0	88.1	89.8	90.5	88.8
17	1000.	87.7	87.3	88.8	89.2	87.5
18	1250.	87.2	86.5	87.7	88.2	86.9
19	1600.	87.6	86.5	87.6	87.7	85.9
20	2000.	84.5	83.2	84.5	85.5	83.3
21	2500.	84.7	82.6	84.2	84.9	82.3
22	3150.	86.6	84.9	85.6	86.6	83.2
23	4000.	85.1	81.8	83.4	83.8	82.5
24	5000.	85.7	81.2	83.7	84.0	82.5
25	6300.	85.9	80.4	83.3	83.7	83.4
26	8000.	84.3	77.9	82.2	82.1	79.0
27	10000.	85.1	76.2	80.7	81.6	77.6
28	12500.	85.2	72.4	78.3	79.7	76.2
29	16000.	84.8	69.5	76.8	77.1	75.2

OASPL

106.0 105.9 107.5 108.5 106.3

FOLDOUT FRAME

141

ORIGINAL PAGE IS  
OF POOR QUALITY

PEED = 3118. RPM

PERCENT SPEED 81.0

FGK 14058

HUMIDITY = 60.0 PC

BAROMETER = 29.32 IN HG

XM11 .567

S.S. 54

FOLDOUT FRAME

2

141

FRAME 1



DATA OF 906. SURSET NO. 54. READINGS 41 42 43

QCSEE CTW ENGINE  
BULK-ABSORBER INLET  
3000 FT. RUNWAY CONF.  
ENGINE WITH APPROACH FLAPS

*SPL*

LOSSLESS ARRAY

*FLYOVER PLANE*

DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERE  
(FOR POWER AND DIRECTIVITY COMPUTATION)

*ENGINE CENTERLINE MICROPHONES*

ANGLE  $\theta_f$  60. 90.

COMPUTED DASPL 116.1 115.3

BAND FREQUENCY

1	25	107.7	106.2
2	32	107.9	105.4
3	40	109.5	107.2
4	50	107.0	108.4
5	63	103.0	106.2
6	80	104.4	103.9
7	100	104.9	102.7
8	125	103.0	101.4
9	160	98.7	97.0
10	200	95.4	96.6
11	250	96.6	97.2
12	315	95.9	98.4
13	400	97.0	98.8
14	500	95.3	96.3
15	630	91.9	94.0
16	800	91.6	93.1
17	1000	90.5	92.0
18	1250	90.1	90.2
19	1600	92.3	89.5
20	2000	88.5	86.2
21	2500	90.7	87.0
22	3150	94.2	88.7
23	4000	91.8	85.1
24	5000	94.0	86.2
25	6300	92.1	89.1
26	8000	89.1	84.2
27	10000	89.7	83.7
28	12500	85.4	82.5
29	16000	86.0	86.3

142

CONFIGURATION NO 103  
SPEED = 3118. RPM  
PERCENT SPEED = 81.0

S S L E S S   A R R A Y

RADIUS WITH NO ATMOSPHERIC ATTENUATION  
AND DIRECTIVITY COMPUTATIONS)

142

SIX DECIBELS HAVE BEEN SUBTRACTED FROM THE ORIGINAL DATA  
 OCSEE CTW ENGINE  
 BULK-ABSORBER INLET  
 3000 FT. RUNWAY CONF.  
 ENGINE WITH APPROACH FLAPS

ORIGINAL PAGE IS  
 OF POOR QUALITY

SPL LOSSLESS ARR

FLYOVER PLANE DATA AT 100.0 FT RADIUS WITH NO ATMOSP  
 (FOR POWER AND DIRECTIVITY COMPU

ANGLE, $\theta$	30.	40.	50.	60.	70.	80.	90.	100.	140.
COMPUTED SASPL	107.7	109.9	109.7	110.6	110.1	109.6	109.8	110.2	110.8 111.9 1
BAND FREQUENCY									
1 25	96.5	99.3	99.7	100.8	98.8	100.5	100.0	100.0	98.8 104.3 1
2 32	97.5	99.7	101.5	102.0	102.8	100.7	100.0	101.2	99.5 104.0 1
3 40	97.2	102.0	101.5	104.2	102.5	99.7	100.8	100.5	103.3 104.8 1
4 50	99.2	102.8	100.7	101.7	100.5	98.0	101.0	101.2	103.5 104.8 1
5 63	97.2	99.3	98.0	97.3	96.8	99.3	100.3	101.7	102.2 101.8 1
6 80	98.0	96.3	95.5	95.3	99.0	99.8	98.8	99.2	100.7 98.7 1
7 100	95.5	94.2	95.3	97.7	98.5	98.2	97.3	98.0	97.3 96.8 1
8 125	94.5	93.0	96.7	98.5	96.0	97.2	96.5	97.0	97.7 96.8 1
9 160	92.2	95.0	96.0	94.0	94.4	95.0	96.2	95.7	96.2 93.8 9
10 200	90.5	94.7	93.0	93.9	94.0	94.4	95.9	96.4	97.2 91.4 9
11 250	89.0	90.9	91.5	92.9	93.7	94.5	94.7	96.0	95.2 89.7 9
12 315	88.4	90.9	91.9	92.2	93.4	94.1	93.4	94.1	93.6 88.1 9
13 400	85.8	90.8	90.4	90.4	91.3	92.4	92.9	93.4	93.3 89.6 8
14 500	83.8	87.0	87.3	88.3	90.1	91.5	91.3	91.3	90.3 86.5 8
15 630	82.2	85.4	86.4	87.7	88.7	89.5	89.7	88.9	88.2 85.7 8
16 800	84.1	85.6	86.1	87.4	88.4	89.6	89.1	87.9	87.9 85.9 8
17 1000	84.0	85.3	85.6	86.1	87.3	88.3	87.8	86.5	86.0 85.8 8
18 1250	87.4	87.0	86.7	86.7	87.0	87.5	86.4	85.4	84.4 85.0 8
19 1600	94.1	92.3	90.6	90.6	89.9	88.3	87.1	85.1	84.1 85.8 9
20 2000	87.7	88.0	88.2	86.2	85.4	85.4	83.9	82.7	81.0 82.4 8
21 2500	89.8	91.0	91.5	89.7	87.8	86.7	84.3	82.8	81.0 82.1 9
22 3150	93.8	95.3	96.2	95.7	93.2	91.0	87.3	85.0	82.1 83.7 9
23 4000	91.9	92.9	91.7	91.1	88.6	87.6	83.7	82.1	79.6 81.6 8
24 5000	91.1	93.3	92.3	92.0	90.0	88.5	84.2	82.8	79.6 80.8 8
25 6300	89.2	92.6	91.9	90.9	88.4	86.9	84.3	81.9	79.2 79.6 8
26 8000	86.1	89.9	89.5	88.2	87.0	84.9	82.4	79.7	76.8 77.2 7
27 10000	82.2	89.2	88.2	86.8	85.9	83.8	81.3	78.2	75.1 76.9 7
28 12500	79.3	86.4	85.2	84.6	83.4	80.7	77.8	76.4	76.6 76.5 7
29 16000	81.4	85.1	83.8	83.8	80.6	79.8	80.1	80.3	80.3 80.3 8

143

FROM THE ORIGINAL DATA.

CONFIGURATION NO 103  
 SPEED = 3118. RPM  
 PERCENT SPEED = 81.0

LOSSLESS ARRAY

RADIUS WITH NO ATMOSPHERIC ATTENUATION  
 AND DIRECTIVITY COMPUTATIONS)

ORIGINAL PAGE IS  
 OF POOR QUALITY

10. 90. 100. 140. 150. 160. 180.

10.8 110.2 110.8 111.9 116.1 119.4 117.7

10.0	100.0	98.8	104.3	101.7	106.0	102.8
10.0	101.2	99.5	104.0	105.8	108.0	105.5
10.8	100.5	103.3	104.8	108.0	112.2	110.7
10.0	101.2	103.5	104.8	110.7	112.5	110.3
10.3	101.7	102.2	101.8	107.8	111.3	109.5
10.8	99.2	100.7	98.7	107.7	110.3	107.3
10.3	98.0	97.3	96.8	103.8	107.2	105.7
10.5	97.0	97.7	96.8	100.5	105.2	104.3
10.2	95.7	96.2	93.8	96.5	104.2	103.0
10.9	96.4	97.2	91.4	95.4	103.4	103.5
10.7	96.0	95.2	89.7	93.0	101.0	102.2
10.4	94.1	93.6	88.1	90.7	98.7	100.1
10.9	93.4	93.3	89.6	89.3	97.9	99.1
10.3	91.3	90.3	86.5	88.3	96.1	97.1
10.7	88.9	88.2	85.7	87.4	94.4	95.9
10.1	87.9	87.9	85.9	87.1	93.4	95.2
10.8	86.5	86.0	85.8	86.8	92.3	93.6
10.4	85.4	84.4	85.0	86.4	90.9	92.7
10.1	85.1	84.1	85.8	86.9	90.3	91.4
10.9	82.7	81.0	82.4	84.0	89.2	89.7
10.3	82.8	81.0	82.1	84.0	87.1	88.6
10.3	85.0	82.1	83.7	84.5	86.6	86.8
10.7	82.1	79.6	81.6	82.7	84.9	85.2
10.2	82.8	79.6	80.8	81.6	83.3	83.6
10.3	81.9	79.2	79.6	80.7	82.4	82.6
10.4	79.7	76.8	77.2	78.0	82.6	79.9
10.3	78.2	75.1	76.9	76.7	84.2	79.4
10.8	76.4	76.6	76.5	76.5	86.6	78.9
10.1	80.3	80.3	80.3	80.3	90.3	80.4

143

FOLDOUT FRAME 2

SPL

LOSSLESS DATA AT 100 FOOT RADIUS

OCSEF DTW ENGINE

BULK-ABSORBER INLET

3000 FT. RUNWAY COME.

ENGINE WITH APPROACH FLAPS

READING NUMBERS = 44 45 46

CONFIGURATION NO = 103

SPEED = 3118. RPM

TEMPERATURE = 80.0 F

RELATIVE HUMIDITY = 59.0 PC

SIDELINE PLANE

300M MICROPHONES - LOSSLESS DATA

MIC # 14 15 16 17 18

R 0. 31. 43. 54. 35.

THETA,  $\theta$ , 90. 90. 90. 90. ~~7~~ 120

Z 106. 91. 86. 81. 65.

DISTANCE 91. 82. 83. 86. 61.

PHI,  $\phi$  0. 22. 31. 39. 35.

INDEX FREQ

1	25.	92.6	90.1	95.7	96.7	92.4
2	32.	94.1	94.3	98.0	98.0	94.4
3	40.	95.5	95.8	97.2	98.0	94.4
4	50.	97.5	97.8	100.5	100.7	96.5
5	63.	97.8	96.4	96.8	97.3	97.9
6	80.	97.1	96.3	97.2	98.5	98.0
7	100.	97.0	94.8	96.7	98.0	99.0
8	125.	97.6	96.6	93.9	99.5	97.9
9	160.	95.0	95.1	96.7	97.5	95.6
10	200.	95.3	95.6	97.7	99.3	95.9
11	250.	94.3	94.6	97.0	98.0	94.7
12	315.	94.2	95.6	96.7	98.5	94.7
13	400.	93.9	95.0	96.2	97.4	93.6
14	500.	92.7	93.7	95.6	95.9	92.8
15	630.	90.6	91.4	92.8	93.8	90.6
16	800.	91.5	90.7	92.1	92.3	90.5
17	1000.	90.0	89.4	91.2	91.0	89.5
18	1250.	89.0	89.0	89.7	90.0	89.2
19	1600.	91.1	91.0	89.4	89.9	88.4
20	2000.	86.5	85.4	86.5	87.0	85.4
21	2500.	86.0	84.3	85.5	86.4	84.1
22	3150.	88.8	86.0	87.6	87.5	84.7
23	4000.	86.5	83.2	85.1	85.3	84.0
24	5000.	87.5	83.6	85.5	85.5	84.3
25	6300.	87.4	81.7	85.0	85.4	85.1
26	8000.	85.8	79.4	83.7	83.4	81.4
27	10000.	86.1	77.4	82.0	82.6	78.9
28	12500.	86.2	73.4	79.6	80.0	77.2
29	16000.	85.6	70.3	78.1	78.2	75.8

FOLDOUT FRAME

OASPL

107.9 107.5 109.4 110.2 107.9

141

46

SPEED = 3118. RPM

PERCENT SPEED 86.0

FGK 16102

RELATIVE HUMIDITY = 59.0 PC

BAROMETER = 29.32 IN HG

XM11 .6014

SS. 55

FRAME 1

144

FOLDOUT FRAME

2

DATA OF 906. SURSET NO. 55. READINGS 44 45 46

OCSEE OTW ENGINE  
BULK-ABSORBER INLET  
3000 FT. RUNWAY CONF.  
ENGINE WITH APPROACH FLAPS

*SPL* LOSSLESS ARRAY

ORIGINAL PAGE IS  
OF POOR QUALITY

*SIDEWIND PLANE* DATA AT 100.0 FT RADIUS WITH NO ATMOSPHER  
(FOR POWER AND DIRECTIVITY COMPUTA

ANGLE *9* 60. 90.

COMPUTED CASPL 117.4 116.9

RAND FREQUENCY

1	25	108.5	107.4
2	32	108.7	107.0
3	40	109.4	108.4
4	50	108.4	110.4
5	63	108.7	107.9
6	80	106.2	105.5
7	100	105.2	104.0
8	125	104.7	102.5
9	160	100.2	99.2
10	200	99.4	98.4
11	250	98.1	98.7
12	315	98.6	99.9
13	400	98.3	100.3
14	500	95.8	97.8
15	630	93.9	95.5
16	800	94.4	94.8
17	1000	93.2	93.3
18	1250	92.2	92.1
19	1600	95.8	92.0
20	2000	90.4	87.9
21	2500	91.7	88.5
22	3150	95.5	90.5
23	4000	91.4	85.9
24	5000	95.3	87.5
25	6300	92.6	89.3
26	8000	89.7	84.8
27	10000	89.8	84.0
28	12500	85.4	82.4
29	16000	85.9	86.3

145

FOLDOUT FRAME

CONFIGURATION NO 103  
SPEED = 3118. RPM  
PERCENT SPEED = 86.0

LESS ARRAY

RADIUS WITH NO ATMOSPHERIC ATTENUATION  
AND DIRECTIVITY COMPUTATIONS)

ORIGINAL PAGE IS  
OF POOR QUALITY

145

FOLDOUT FRAME

2



DATA OF 906. SUPSET NO. 55. READINGS 44 45 46

SIX DECIBELS HAVE BEEN SUBTRACTED FROM THE ORIGINAL DATA.

OCSEE OTW ENGINE  
BULK-ABSORBER INLET  
3000 FT. RUNWAY CONF.  
ENGINE WITH APPROACH FLAPS

ORIGINAL PAGE IS  
OF POOR QUALITY

SPL LOSSLESS ARRAY

FLYOVER PLANE DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERIC  
(FOR POWER AND DIRECTIVITY COMPUTATION)

ANGLE, $\theta$		0.	30.	40.	50.	60.	70.	80.	90.	100.	140.	150.
COMPUTED SASPL		108.9	110.7	111.1	111.8	111.9	111.1	111.9	111.9	113.1	115.3	118.1
RAND. FREQUENCY												
1	25	95.3	97.0	98.5	101.0	102.2	99.2	101.2	101.3	103.0	108.8	103.5
2	32	97.5	100.3	102.7	102.8	105.0	101.8	101.0	99.7	103.2	107.8	106.7
3	40	99.7	103.0	102.8	105.8	104.3	102.2	102.2	103.5	105.2	107.8	109.0
4	50	99.3	103.0	103.2	102.3	101.3	100.2	102.8	104.2	105.7	106.0	112.3
5	63	100.5	100.5	100.5	99.0	98.7	101.3	104.3	102.8	104.5	105.8	111.7
6	80	99.2	98.3	97.5	97.0	99.8	101.3	101.7	100.7	102.2	103.2	109.0
7	100	96.0	96.0	96.2	98.8	100.5	99.8	98.8	100.2	99.2	101.5	106.7
8	125	95.7	97.5	98.0	99.7	98.7	98.5	99.5	98.8	100.5	99.7	102.2
9	160	94.2	96.9	96.7	95.4	95.9	96.5	97.2	97.0	97.5	96.0	99.0
10	200	92.4	96.2	94.4	95.2	95.0	95.9	98.0	98.4	98.5	94.5	98.0
11	250	90.9	92.7	92.7	94.5	95.2	96.4	95.9	98.4	97.2	92.9	95.4
12	315	90.2	92.9	94.1	93.9	94.7	96.2	95.6	95.7	95.1	90.2	93.4
13	400	87.4	93.4	92.1	92.4	93.3	95.1	95.1	95.6	94.8	89.9	92.9
14	500	86.0	89.5	89.0	91.1	92.5	93.3	93.5	93.3	92.6	87.8	91.5
15	630	84.7	87.7	88.4	90.0	90.4	92.4	92.0	91.0	89.9	87.2	90.0
16	800	83.7	87.2	88.1	90.1	90.4	91.9	91.4	89.9	89.9	88.4	90.1
17	1000	83.6	87.8	87.8	89.0	89.5	90.6	90.5	88.6	88.1	89.3	89.8
18	1250	87.4	88.7	88.7	88.2	88.4	89.5	88.7	87.7	87.0	88.9	89.2
19	1600	83.6	86.3	87.6	85.3	82.1	82.1	89.3	88.8	88.3	89.6	90.8
20	2000	88.0	88.5	88.5	87.4	87.4	87.4	86.5	85.2	83.9	86.0	87.2
21	2500	92.5	91.8	91.2	90.2	88.3	88.5	86.7	84.8	83.0	85.5	86.3
22	3150	96.5	96.8	95.8	94.7	92.0	92.2	88.3	86.2	84.3	86.5	86.5
23	4000	91.2	91.2	90.7	89.6	87.7	88.2	84.9	83.1	81.2	84.4	84.7
24	5000	92.7	92.8	92.7	91.8	90.0	90.0	86.7	84.2	81.2	83.0	83.3
25	6300	91.1	91.6	91.2	90.4	88.4	88.4	85.1	83.1	80.7	81.9	82.6
26	8000	88.2	89.0	88.7	87.2	86.2	86.2	84.0	80.8	78.0	79.0	79.7
27	10000	86.1	87.6	87.5	86.0	85.3	84.8	82.8	78.5	75.9	78.0	78.7
28	12500	82.5	84.5	84.0	83.0	81.8	82.1	78.7	76.4	76.5	77.2	77.0
29	16000	82.0	83.0	82.4	81.9	80.0	81.1	80.0	80.3	80.3	80.2	80.2

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FOLDOUT FRAME /

THE ORIGINAL DATA.

CONFIGURATION NO 103  
SPEED = 3118. RPM  
PERCENT SPEED = 86.0

LESS ARRAY

ORIGINAL PAGE IS  
OF POOR QUALITY

S WITH NO ATMOSPHERIC ATTENUATION  
DIRECTIVITY COMPUTATIONS)

90. 100. 140. 150. 160. 180.

1.9 113.1 115.3 118.1 120.3 120.3

1.3	103.0	108.8	103.5	102.8	104.0
9.7	103.2	107.8	106.7	107.0	107.8
3.5	105.2	107.8	109.0	109.8	112.0
4.2	105.7	106.0	112.3	114.7	115.0
2.8	104.5	105.8	111.7	113.0	112.2
0.7	102.2	103.2	109.0	111.2	109.8
0.2	99.2	101.5	106.7	109.0	108.0
8.8	100.5	99.7	102.2	107.8	105.8
7.0	97.5	96.0	99.0	105.9	104.2
8.4	98.5	94.5	98.0	105.4	105.4
8.4	97.2	92.9	95.4	103.0	104.0
5.7	95.1	90.2	93.4	100.6	102.4
5.6	94.8	89.9	92.9	100.1	101.4
3.3	92.6	87.8	91.5	97.8	99.0
1.0	89.9	87.2	90.0	95.5	98.0
9.9	89.9	88.4	90.1	96.1	97.6
8.6	88.1	89.3	89.8	93.8	95.8
7.7	87.0	88.9	89.2	92.9	94.5
8.8	88.3	89.6	90.8	92.6	93.4
5.2	83.9	86.0	87.2	90.2	91.9
4.8	83.0	85.5	86.3	88.8	91.0
6.2	84.3	86.5	86.5	88.0	88.8
3.1	81.2	84.4	84.7	86.4	87.6
4.2	81.2	83.0	83.3	85.0	85.5
3.1	80.7	81.9	82.6	83.4	84.2
0.8	78.0	79.0	79.7	81.2	81.4
8.5	75.9	78.0	78.7	80.0	80.7
6.4	76.5	77.2	77.0	78.7	80.0
0.3	80.3	80.2	80.2	80.0	80.8

146

C-4

FOLDOUT FRAME 2

# SPL LOSSLESS DATA AT 100 FOOT RADIUS

OCSEE OTW ENGINE

PULK-ABSORBER INLET

ORIGINAL PAGE IS  
OF POOR QUALITY

3000 FT. RUNWAY CONF.

ENGINE WITH APPROACH FLAPS

READING NUMBERS = 47 48 49

CONFIGURATION NO = 103

SPEED = 3465. RPM

TEMPERATURE = 81.0 F

RELATIVE HUMIDITY = 59.0 PC

## SIDELINE PLANE ROOM MICROPHONES - LOSSLESS DATA

MIC # 14 15 16 17 18

R 0. 31. 43. 54. 35.

THETA,  $\theta_s$  90. 90. 90. 90. ~~120~~

Z 106. 91. 86. 81. 65.

DISTANCE 91. 82. 83. 86. 61.

PHI,  $\phi$  0. 22. 31. 39. 35.

INDEX FREQ

1	25.	91.5	90.4	99.0	98.0	94.0
2	32.	94.1	93.9	101.3	100.3	96.5
3	40.	91.8	96.6	100.2	101.7	96.7
4	50.	97.0	99.4	103.0	101.2	99.5
5	63.	96.5	99.8	99.5	99.3	97.5
6	80.	97.8	97.4	99.3	100.8	99.7
7	100.	96.8	96.1	99.5	100.0	99.7
8	125.	98.8	97.6	99.7	101.0	99.4
9	160.	96.2	96.3	98.9	100.2	97.1
10	200.	96.3	96.9	99.2	101.0	98.2
11	250.	95.3	96.8	99.2	99.8	96.7
12	315.	94.8	97.5	99.1	99.9	96.4
13	400.	94.7	96.1	99.1	99.2	95.4
14	500.	94.4	95.0	97.8	97.9	94.6
15	630.	92.4	93.2	95.3	95.9	93.1
16	800.	92.6	92.2	94.7	95.0	92.6
17	1000.	91.0	91.4	93.7	94.2	92.0
18	1250.	89.7	90.0	92.1	92.5	91.2
19	1600.	92.3	90.2	91.3	92.1	90.6
20	2000.	88.0	86.9	88.6	89.1	87.6
21	2500.	87.0	86.0	87.2	88.2	86.0
22	3150.	88.1	86.5	89.0	89.0	86.4
23	4000.	87.1	84.3	86.3	86.8	85.7
24	5000.	87.4	83.9	86.2	86.3	85.8
25	6300.	97.2	82.7	85.3	86.0	86.7
26	8000.	85.8	79.5	83.8	83.9	82.6
27	10000.	85.7	77.3	82.3	83.0	79.9
28	12500.	85.8	73.9	79.5	80.5	78.5
29	16000.	85.7	70.9	78.5	78.6	77.6

OASPL

108.2 108.9 111.7 112.1 109.6

FOLDOUT FRAME 1

14

ORIGINAL PAGE IS  
OF POOR QUALITY

SPEED = 3465. RPM

PERCENT SPEED 90.0

FGK 17787

HUMIDITY = 59.0 PC

BAROMETER = 29.31 IN HG

XM11 .690

S.S. 56

FRAME 1

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FOLDOUT FRAME 2

DATA OF 906.. SURSET NO. 56. READINGS 47 48 49

QCSEE CTW ENGINE  
BULK-ABSORBER INLET  
3000 FT. RUNWAY CNF.  
ENGINE WITH APPROACH FLAPS

*SPL* LOSSLESS ARRAY

*FLYOVER PLANE* DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERIC  
(FOR POWER AND DIRECTIVITY COMPUTATION)

*ENGINE CENTERLINE MICROPHONES*

ANGLE,  $\theta$ , 60. 90.

COMPUTED CASPL 116.9 118.5

BAND FREQUENCY

1	25	108.2	107.4
2	32	108.4	107.7
3	40	110.2	110.2
4	50	107.2	111.7
5	63	105.7	110.4
6	80	106.5	108.7
7	100	104.7	105.7
8	125	102.9	103.9
9	160	99.7	101.5
10	200	97.1	99.7
11	250	97.7	100.9
12	315	98.1	101.4
13	400	98.1	101.8
14	500	97.7	99.7
15	630	95.7	97.7
16	800	95.3	96.3
17	1000	94.5	95.5
18	1250	94.1	94.1
19	1600	97.0	93.1
20	2000	91.9	90.4
21	2500	91.4	90.4
22	3150	93.0	90.7
23	4000	90.8	87.3
24	5000	92.7	88.7
25	6300	89.9	89.4
26	8000	87.0	84.6
27	10000	87.1	83.6
28	12500	82.7	82.3
29	16000	86.0	86.1

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FOLDOUT FRAME

CONFIGURATION NO 103  
SPEED = 3465. RPM  
PERCENT SPEED = 90.0

SSLESS ARRAY

RADIUS WITH NO ATMOSPHERIC ATTENUATION  
AND DIRECTIVITY COMPUTATIONS)

148

FOLDOUT FRAME 2

SIX DECIBELS HAVE BEEN SUBTRACTED FROM THE ORIGINAL DATA.

ACSEE OTW ENGINE

BULK-ABSORBER INLET

3000 FT. RUNWAY CONF.

ENGINE WITH APPROACH FLAPS

ORIGINAL PAGE IS  
OF POOR QUALITY

SPL

LOSSLESS ARRAY

FLYOVER PLANE

DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERIC  
(FOR POWER AND DIRECTIVITY COMPUTATION)ANGLE,  $\theta$  0. 30. 40. 50. 60. 70. 80. 90. 100. 140. 150.

COMPUTED GASPL 109.8 111.9 111.7 112.2 112.7 112.5 113.8 114.1 114.4 113.6 120.

## BAND FREQUENCY

1	25	97.3	100.3	101.0	101.8	100.8	101.5	102.0	104.0	101.7	103.2	107.
2	32	98.3	102.5	102.7	103.5	104.5	102.3	103.8	104.7	102.8	106.0	110.
3	40	100.2	103.2	104.2	103.8	104.3	103.0	103.8	106.0	106.3	105.8	111.
4	50	101.8	104.8	103.8	104.7	103.2	101.0	105.2	105.8	108.5	108.0	113.
5	63	101.8	102.5	101.0	99.2	101.3	102.0	105.3	105.0	106.0	104.5	113.
6	80	100.3	99.5	98.3	98.8	102.5	104.5	104.0	103.2	103.7	100.5	111.
7	100	97.0	96.2	97.7	100.8	101.5	101.0	102.5	101.5	101.2	98.2	109.
8	125	96.5	95.7	99.2	100.7	99.7	100.3	101.8	101.2	101.2	96.3	105.
9	160	94.9	98.2	98.0	96.2	97.9	98.0	99.5	99.4	99.0	94.0	102.
10	200	92.9	96.9	95.2	96.4	97.2	98.0	99.5	99.4	99.4	94.7	99.
11	250	90.7	93.5	94.4	96.2	97.4	97.9	97.5	98.9	97.9	92.7	97.
12	315	91.6	93.7	94.7	95.4	96.7	97.4	97.6	97.2	96.2	91.2	96.
13	400	89.3	94.1	93.9	94.1	95.3	96.6	97.6	96.8	95.8	91.4	95.
14	500	86.8	90.1	90.8	92.0	94.3	95.3	95.1	94.6	94.1	90.6	93.
15	630	85.0	89.4	90.9	92.2	92.7	93.9	93.9	92.5	92.0	89.9	92.
16	800	84.1	89.3	89.9	91.4	92.3	93.4	92.6	91.3	91.8	90.1	92.
17	1000	85.5	88.3	89.3	89.6	91.0	92.0	91.6	90.0	90.1	90.8	91.
18	1250	89.2	89.4	89.4	89.7	90.2	91.4	90.1	88.7	88.4	90.4	90.
19	1600	96.3	95.0	93.5	94.5	94.1	93.6	91.1	89.0	88.0	90.0	90.
20	2000	92.4	88.4	87.2	88.2	89.0	89.2	87.7	86.4	85.4	86.9	88.
21	2500	89.2	89.5	87.8	88.3	88.3	88.7	86.8	85.7	84.2	86.0	88.
22	3150	93.8	93.3	92.8	92.0	91.0	91.3	87.7	86.2	84.8	87.3	87.
23	4000	89.4	90.6	88.7	88.8	87.9	87.9	85.4	84.3	82.7	85.1	86.
24	5000	89.8	91.3	89.6	90.2	88.3	89.3	85.5	84.3	82.3	84.3	85.
25	6300	89.6	90.2	89.1	88.9	87.1	87.1	85.1	83.2	81.6	83.2	84.
26	8000	85.5	87.0	85.1	85.6	84.5	84.1	82.1	80.3	79.3	80.0	82.
27	10000	83.9	85.7	84.1	84.4	83.2	82.6	80.7	78.2	77.1	78.8	84.
28	12500	80.8	82.6	80.6	81.1	79.9	79.6	77.0	76.3	76.3	77.4	86.
29	16000	80.1	81.0	80.0	80.1	79.7	79.7	80.0	80.1	80.1	79.9	90.

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FOLDOUT FRAME 1

FROM THE ORIGINAL DATA.

CONFIGURATION NO 103

SPEED = 3465. RPM

PERCENT SPEED = 90.0

LOSSLESS ARRAY

RADIUS WITH NO ATMOSPHERIC ATTENUATION  
(R AND DIRECTIVITY COMPUTATIONS)ORIGINAL PAGE IS  
OF POOR QUALITY

80. 90. 100. 140. 150. 160. 180.

3.8 114.1 114.4 113.6 120.3 121.8 122.3

12.0	104.0	101.7	103.2	107.3	104.0	105.2
13.8	104.7	102.8	106.0	110.7	109.0	109.7
13.8	106.0	106.3	105.8	111.3	111.7	113.2
15.2	105.8	108.5	108.0	113.7	115.5	115.2
15.3	105.0	106.0	104.5	113.5	115.0	115.3
14.0	103.2	103.7	100.5	111.5	113.0	112.7
12.5	101.5	101.2	98.2	109.0	111.0	110.5
11.8	101.2	101.2	96.3	105.8	109.5	109.5
9.5	99.4	99.0	94.0	102.4	107.5	108.0
9.5	99.4	99.4	94.7	99.9	106.9	108.5
7.5	98.9	97.9	92.7	97.9	104.4	107.0
7.6	97.2	96.2	91.2	96.1	102.9	105.4
7.6	96.8	95.8	91.4	95.4	101.4	104.1
5.1	94.6	94.1	90.6	93.5	99.6	102.1
3.9	92.5	92.0	89.9	92.5	97.5	101.5
2.6	91.3	91.8	90.1	92.4	97.8	100.1
1.6	90.0	90.1	90.8	91.3	96.3	99.0
0.1	88.7	88.4	90.4	90.2	94.9	97.2
1.1	89.0	88.0	90.0	90.6	94.1	96.5
7.7	86.4	85.4	86.9	88.7	92.0	94.5
6.8	85.7	84.2	86.0	88.0	90.7	93.0
7.7	86.2	84.8	87.3	87.7	89.5	90.8
5.4	84.3	82.7	85.1	86.2	88.1	89.7
5.5	84.3	82.3	84.3	85.0	86.8	88.0
5.1	83.2	81.6	83.2	84.2	85.2	86.4
2.1	80.3	79.3	80.0	82.5	82.5	83.7
0.7	78.2	77.1	78.8	84.1	84.1	84.1
7.0	76.3	76.3	77.4	86.4	86.4	86.4
0.0	80.1	80.1	79.9	90.1	90.1	90.1

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FOLDOUT FRAME 2



SPL

LOSSLESS DATA AT 100 FOOT RADIUS

OCSEE OTW ENGINE

BULK-ABSORBER INLET

3000 FT. RUNWAY CONF.

ENGINE WITH APPROACH FLAPS

ORIGINAL PAGE IS  
OF POOR QUALITY

READING NUMBERS = 50 51 52

CONFIGURATION NO = 103

SPEED = 3626. RPM

TEMPERATURE = 81.0 F

RELATIVE HUMIDITY = 58.0 PC

SIDELINE PLANE

ROOM MICROPHONES - LOSSLESS DATA

MIC # 14 15 16 17 18

R 0. 31. 43. 54. 35.

THETA,  $\theta_s$  90. 90. 90. 90. X.120

Z 106. 91. 86. 81. 65.

DISTANCE 91. 82. 83. 86. 61.

PHI,  $\phi$  0. 22. 31. 30. 35.

INDEX FREQ

1	25.	92.5	91.4	99.7	99.5	94.5
2	32.	94.0	95.9	102.7	100.5	99.0
3	40.	96.0	97.3	102.3	102.7	98.0
4	50.	98.5	99.8	103.3	102.8	99.7
5	63.	99.6	98.3	102.5	101.7	101.0
6	80.	99.1	99.1	101.5	102.7	100.4
7	100.	97.8	98.4	100.4	101.3	99.9
8	125.	99.6	99.6	102.4	102.8	100.0
9	160.	97.8	98.4	101.2	101.0	98.1
10	200.	98.8	99.3	101.0	101.8	98.9
11	250.	97.5	97.9	100.4	101.5	97.6
12	315.	96.5	98.8	100.2	101.2	97.6
13	400.	96.7	97.8	100.2	100.0	96.9
14	500.	96.6	96.8	99.1	99.7	96.1
15	630.	94.3	95.2	97.3	97.3	94.1
16	800.	94.3	94.4	96.3	96.3	94.6
17	1000.	93.7	93.6	95.5	95.7	93.5
18	1250.	92.5	92.0	94.1	93.9	92.9
19	1600.	92.7	91.0	93.3	93.6	91.6
20	2000.	90.5	89.0	91.0	91.5	89.4
21	2500.	88.9	86.9	88.9	89.7	88.0
22	3150.	89.0	86.5	88.1	88.6	87.4
23	4000.	88.5	85.2	87.3	87.6	87.5
24	5000.	89.9	84.4	86.2	86.8	87.7
25	6300.	88.9	83.1	85.8	86.5	88.1
26	8000.	87.2	80.2	84.2	84.4	84.3
27	10000.	87.1	78.0	82.7	83.4	81.4
28	12500.	87.7	74.6	79.8	80.9	80.0
29	16000.	87.6	72.4	78.7	79.2	79.5

OASPL

110.0 110.2 113.3 113.5 110.7

FOLDOUT FRAME 1

150

ORIGINAL PAGE IS  
OF POOR QUALITY

2  
SPEED = 3626. RPM

PERCENT SPEED 93.0

FGK 19568

HUMIDITY = 58.0 PC

BAROMETER = 29.31 IN HG

XMH .766

S.S. 57

IT FRAME

1

150

FOLDOUT FRAME

2

DATA OF 906. SUPSET NO. 57. READINGS 50 51 52

OCSEE OTW ENGINE  
RUEK-ABSORBER INLET  
3000 FT. RUNWAY CONF.  
ENGINE WITH APPROACH FLAPS

*SPL*

LOSSLESS ARRAY

*FLYOVER PLANE*

DATA AT 100.0 FT RADIUS WITH NO ATMOSPHER  
(FOR POWER AND DIRECTIVITY COMPUTA

*ENGINE CENTERLINE MICROPHONES*

ANGLE *90* 60. 90.

COMPUTED OASPL 119.7 120.6

BAND FREQUENCY

1	25	109.0	109.4
2	32	111.2	109.9
3	40	111.0	112.5
4	50	109.7	114.5
5	63	107.9	112.7
6	80	110.0	110.2
7	100	106.7	107.4
8	125	104.5	106.5
9	160	101.2	103.5
10	200	100.1	102.4
11	250	99.9	101.6
12	315	99.6	102.4
13	400	100.0	103.0
14	500	99.3	101.8
15	630	97.9	98.5
16	800	97.4	98.3
17	1000	96.2	97.2
18	1250	94.9	95.2
19	1600	93.6	93.6
20	2000	92.4	91.7
21	2500	91.0	91.4
22	3150	89.4	90.2
23	4000	88.3	87.4
24	5000	88.8	87.9
25	6300	86.4	88.6
26	8000	83.5	85.5
27	10000	83.6	83.5
28	12500	82.4	82.4
29	16000	86.2	86.2

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FOLDOUT FRAME |

CONFIGURATION NO 103  
SPEED = 3626. RPM  
PERCENT SPEED = 93.0

S L E S S   A R R A Y

DIUS WITH NO ATMOSPHERIC ATTENUATION  
NO DIRECTIVITY COMPUTATIONS)

151

FOLDOUT FRAME

2

DATA OF 905. SURSET NO. 57. READINGS 50 51 52

SIX DECIBELS HAVE BEEN SUBTRACTED FROM THE ORIGINAL DATA.

QCSEE OTW ENGINE

BULK-ABSORBER INLET

3000 FT. RUNWAY CONF.

ENGINE WITH APPROACH FLAPS

ORIGINAL PAGE IS  
OF POOR QUALITY

*SPL*

LOSSLESS ARRAY

*FLYOVER PLANE*

DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERIC  
(FOR POWER AND DIRECTIVITY COMPUTATION)

ANGLE  $\theta$  0. 30. 40. 50. 60. 70. 80. 90. 100. 140. 150.

COMPUTED DASPL 110.2 112.1 112.7 113.4 114.6 113.9 115.1 115.6 116.1 115.4 122.3

BAND FREQUENCY

1	25	96.8	100.2	100.2	102.7	105.8	101.3	102.7	104.2	102.0	104.3	108.7
2	32	99.3	102.8	103.8	104.5	106.2	104.0	103.0	104.7	106.0	107.5	114.2
3	40	101.5	103.5	105.2	104.7	105.3	103.0	104.7	105.8	108.3	109.5	113.5
4	50	103.0	104.5	105.0	105.5	104.8	103.2	107.2	108.8	109.2	108.7	115.5
5	63	101.8	103.7	103.7	101.7	102.5	104.2	107.3	107.2	107.8	106.8	115.0
6	80	101.0	101.3	98.7	100.7	105.2	105.5	106.0	104.5	106.5	102.8	114.0
7	100	97.7	97.7	98.5	102.8	104.3	103.5	103.0	102.8	102.8	97.3	109.7
8	125	99.2	97.3	101.8	103.0	102.3	102.7	103.2	102.8	102.8	97.5	106.3
9	160	96.0	99.4	100.0	98.0	99.0	99.7	100.7	101.5	100.7	94.0	103.4
10	200	94.9	99.5	96.4	98.0	98.5	99.2	100.5	101.2	100.2	94.2	103.0
11	250	92.7	95.4	95.9	97.2	98.0	100.0	100.2	101.5	99.7	93.0	100.4
12	315	92.4	95.4	96.1	97.1	97.9	99.1	99.1	98.9	97.7	92.1	98.1
13	400	91.1	95.1	95.1	95.9	96.6	97.9	98.3	97.9	97.4	92.3	97.3
14	500	89.1	91.8	92.1	94.0	95.5	96.6	97.0	96.0	95.3	90.6	95.6
15	630	87.0	90.2	91.7	93.7	94.2	96.0	95.9	94.4	92.7	89.5	94.9
16	800	86.3	89.6	91.3	93.8	94.4	95.8	95.1	93.1	93.3	90.9	94.6
17	1000	85.3	89.3	90.1	92.0	92.6	94.1	93.6	92.0	91.6	90.8	94.1
18	1250	85.7	88.6	88.6	90.2	91.9	93.1	91.5	90.7	89.7	89.9	93.2
19	1600	89.1	89.0	89.8	91.1	91.3	92.8	91.1	91.5	90.3	89.8	93.0
20	2000	85.5	86.7	86.5	89.0	90.4	90.9	89.4	88.7	87.4	87.7	91.5
21	2500	83.8	84.8	85.2	87.5	88.5	89.3	88.0	87.0	85.3	87.0	90.7
22	3150	85.5	85.2	85.5	86.7	87.2	88.3	87.0	86.5	84.7	87.5	89.7
23	4000	83.6	83.8	83.4	85.6	85.9	86.9	85.6	85.1	83.4	85.6	88.9
24	5000	82.6	83.5	82.8	85.1	84.6	86.1	84.0	84.3	82.5	84.7	87.5
25	6300	80.7	81.9	81.6	83.7	83.4	84.9	83.6	83.1	81.6	84.3	86.7
26	8000	77.7	78.8	78.5	80.7	81.2	82.2	81.2	80.3	79.2	81.7	84.0
27	10000	75.9	78.0	77.3	79.3	79.5	80.6	79.3	78.8	77.5	80.8	84.1
28	12500	76.5	76.4	76.4	76.7	76.7	77.4	76.7	76.3	76.4	77.8	86.5
29	16000	80.2	80.2	80.2	80.2	80.2	80.1	80.2	80.2	80.2	80.0	90.2

152

FOLDOUT FRAME

FROM THE ORIGINAL DATA.

CONFIGURATION NO 103

SPEED = 3626. RPM

PERCENT SPEED = 93.0

LOSSLESS ARRAY

ORIGINAL PAGE IS  
OF POOR QUALITYRADIUS WITH NO ATMOSPHERIC ATTENUATION  
(RADIUS AND DIRECTIVITY COMPUTATIONS)

80. 90. 100. 140. 150. 160. 190.

115.1 115.6 116.1 115.4 122.3 123.4 123.7

102.7	104.2	102.0	104.3	108.7	107.0	103.8
103.0	104.7	106.0	107.5	114.2	109.3	109.2
104.7	105.8	108.3	109.5	113.5	112.3	113.8
107.2	108.8	109.2	108.7	115.5	114.7	117.2
107.3	107.2	107.8	106.8	115.0	116.8	116.3
106.0	104.5	106.5	102.8	114.0	115.7	114.7
103.0	102.8	102.8	97.3	109.7	113.2	111.5
103.2	102.8	102.8	97.5	106.3	111.5	111.0
100.7	101.5	100.7	94.0	103.4	110.2	109.4
100.5	101.2	100.2	94.2	103.0	109.5	109.9
100.2	101.5	99.7	93.0	100.4	107.7	109.5
99.1	98.9	97.7	92.1	98.1	105.7	107.7
98.3	97.9	97.4	92.3	97.3	105.4	106.4
97.0	96.0	95.3	90.6	95.6	103.0	104.6
95.9	94.4	92.7	89.5	94.9	101.0	103.2
95.1	93.1	93.3	90.9	94.6	100.4	102.4
93.6	92.0	91.6	90.8	94.1	98.6	100.8
91.5	90.7	89.7	89.9	93.2	97.2	98.9
91.1	91.5	90.3	89.8	93.0	96.3	97.6
89.4	88.7	87.4	87.7	91.5	94.7	96.2
88.0	87.0	85.3	87.0	90.7	93.3	95.0
87.0	86.5	84.7	87.5	89.7	92.0	92.5
85.6	85.1	83.4	85.6	88.9	90.8	91.4
84.0	84.3	82.5	84.7	87.5	89.0	89.5
83.6	83.1	81.6	84.3	86.7	87.7	88.1
81.2	80.3	79.2	81.7	84.0	85.0	84.7
79.3	78.8	77.5	80.8	84.1	84.3	84.6
76.7	76.3	76.4	77.8	86.5	86.5	86.5
80.2	80.2	80.2	80.0	90.2	90.2	90.2

152

FOLDOUT FRAME 2

# SPL LOSSLESS DATA AT 100 FOOT RADIUS

QCSEE OTW ENGINE

BULK-ABSORBER INLET

3000 FT. RUNWAY COME.

ORIGINAL PAGE IS  
OF POOR QUALITY

ENGINE WITH APPROACH FLAPS

READING NUMBERS = 53 54 55

CONFIGURATION NO = 103 SPEED = 1800. RPM

TEMPERATURE = 82.0 F RELATIVE HUMIDITY = 57.0 PC

## SIDELINE PLANE ROOM MICROPHONES - LOSSLESS DATA

MIC # 14 15 16 17 18

P 0. 31. 43. 54. 35.

THETA,  $\theta_s$  90. 90. 90. 90. ~~120~~

Z 106. 91. 86. 81. 65.

DISTANCE 91. 82. 93. 86. 61.

PHI,  $\phi$  0. 22. 31. 39. 35.

INDEX FREQ

1	25.	94.0	77.3	90.0	81.0	78.4
2	32.	91.1	78.9	80.5	81.7	77.9
3	40.	92.8	78.9	80.3	80.5	78.0
4	50.	93.1	94.1	87.3	96.2	82.9
5	63.	83.8	80.4	79.8	81.5	81.7
6	80.	82.5	79.6	79.5	79.7	83.0
7	100.	81.6	78.8	79.4	80.2	79.0
8	125.	78.6	78.1	78.7	79.0	77.7
9	160.	75.8	76.1	78.0	79.2	75.6
10	200.	77.2	77.3	78.5	80.7	76.9
11	250.	77.0	76.9	78.5	78.3	75.9
12	315.	78.2	78.1	78.9	79.2	77.1
13	400.	76.5	75.6	77.2	76.7	76.1
14	500.	74.4	74.2	74.1	74.7	74.4
15	630.	75.4	72.7	73.1	73.1	73.3
16	800.	79.6	76.1	76.7	77.8	76.8
17	1000.	77.0	73.1	73.5	74.5	74.0
18	1250.	76.2	72.5	72.2	72.0	72.7
19	1600.	73.6	70.0	70.3	69.9	70.9
20	2000.	71.5	68.1	68.0	68.0	67.8
21	2500.	71.9	66.8	67.2	68.0	67.3
22	3150.	71.2	65.4	66.6	66.5	66.6
23	4000.	71.6	64.9	66.3	66.6	67.3
24	5000.	73.4	65.8	67.5	67.7	69.3
25	6300.	77.3	69.1	72.0	71.2	73.9
26	8000.	74.6	67.1	70.4	70.2	70.3
27	10000.	74.5	63.7	68.0	68.4	67.1
28	12500.	79.8	64.3	69.6	69.7	70.7
29	16000.	74.7	58.8	64.9	64.9	66.0

OASPL 93.5 90.9 92.5 92.7 91.2

FOLDOUT FRAME 1

ORIGINAL PAGE IS  
OF POOR QUALITY

5

PEED = 1800. RPM

PERCENT SPEED 47.0

FGK 4340

HUMIDITY = 57.0 PC

BAROMETER = 29.31 IN HG

XM11 .273

S.S. 58

FRAME 1

153

FOLDOUT FRAME 2



DATA OF 906. SURSET NO. 58. READINGS 53 54 55

QC SEE OTW ENGINE  
BULK-ABSORBER INLET  
3000 FT. RUNWAY CNF.  
ENGINE WITH APPROACH FLAPS

SPL LOSSLESS ARR A

FLYOVER PLANE

DATA AT 100.0 FT RADIUS WITH NO ATMOSP  
(FOR POWER AND DIRECTIVITY COMPU

ENGINE CENTERLINE MICROPHONES

ANGLE,  $\theta$ , 60. 90.

COMPUTED DASPL 98.9 97.1

BAND FREQUENCY

1	25	91.9	89.7
2	32	91.4	88.5
3	40	90.2	86.9
4	50	90.2	90.4
5	63	86.7	86.5
6	80	84.4	83.9
7	100	84.4	85.9
8	125	80.9	80.9
9	160	78.0	76.7
10	200	77.4	78.7
11	250	78.7	80.2
12	315	78.6	79.4
13	400	78.1	79.1
14	500	75.5	76.7
15	630	72.2	73.7
16	800	84.9	79.8
17	1000	77.7	75.0
18	1250	75.7	72.6
19	1600	78.5	71.5
20	2000	73.1	69.7
21	2500	74.2	69.4
22	3150	73.0	67.5
23	4000	73.5	66.3
24	5000	76.2	68.7
25	6300	81.2	73.2
26	8000	83.3	71.2
27	10000	82.7	68.5
28	12500	74.1	68.2
29	16000	73.2	65.6

154

FOLDOUT FRAME

CONFIGURATION NO 103  
SPEED = 1800. RPM  
PERCENT SPEED = 47.0

LOSSLESS ARRAY

FT RADIUS WITH NO ATMOSPHERIC ATTENUATION  
WER AND DIRECTIVITY COMPUTATIONS)

154

FOLDOUT FRAME

2

SIX DECIBELS HAVE BEEN SUBTRACTED FROM THE ORIGINAL DATA.

QCSEE OTW ENGINE

BULK-ABSORBER INLET

3000 FT. RUNWAY CENE.

ENGINE WITH APPROACH FLAPS

ORIGINAL PAGE IS  
OF POOR QUALITY

SPL LOSSLESS ARRAY

FLYOVER PLANE DATA AT 100.0 FT RADIUS WITH NO ATMOSPHER  
(FOR POWER AND DIRECTIVITY COMPUTA

ANGLE, $\theta$	0.	30.	40.	50.	60.	70.	80.	90.	100.	140.	150.
COMPUTED DASPL	102.3	96.8	95.3	96.0	94.8	92.6	92.5	91.8	92.3	97.6	96.0

BAND FREQUENCY

1	25	82.0	85.7	88.0	89.5	88.3	85.8	86.2	85.2	83.7	90.2	88.0
2	32	81.8	86.2	85.8	86.2	85.3	84.0	84.2	81.7	82.8	90.0	89.0
3	40	82.2	85.5	84.7	87.2	86.3	81.2	81.8	81.7	82.7	88.7	89.0
4	50	82.8	85.8	85.2	84.8	85.3	82.5	84.3	84.0	85.3	89.8	88.0
5	63	84.5	83.8	82.7	80.7	80.8	79.7	92.3	81.0	81.0	87.8	86.0
6	80	82.8	78.8	78.3	78.8	90.0	79.0	79.2	78.0	80.0	86.8	92.0
7	100	81.3	80.3	80.8	92.0	79.8	80.8	78.5	80.2	79.0	84.0	81.0
8	125	80.7	78.3	80.3	80.0	78.0	77.7	77.2	77.3	77.7	81.0	79.0
9	160	77.7	78.7	78.7	76.2	76.2	76.0	75.9	75.0	76.5	78.4	76.0
10	200	79.0	78.5	78.0	77.0	77.5	76.9	77.9	77.2	79.5	77.2	76.0
11	250	77.7	76.5	76.4	76.2	76.7	77.5	76.7	77.0	78.5	76.9	75.0
12	315	76.1	76.2	76.1	76.1	76.2	76.6	74.6	75.4	76.7	74.4	72.0
13	400	72.4	74.1	73.1	72.9	74.3	74.6	73.8	73.1	75.4	74.3	71.0
14	500	72.1	70.6	70.0	71.0	71.6	71.1	70.1	70.3	71.6	73.1	70.0
15	630	71.7	72.0	70.9	71.4	70.4	70.2	68.5	69.2	69.4	71.9	70.0
16	800	83.8	84.1	91.4	80.8	81.3	76.6	72.4	73.1	72.9	76.3	76.0
17	1000	80.5	78.0	75.3	75.0	74.6	71.7	69.2	68.8	69.5	74.7	74.0
18	1250	81.1	77.4	75.4	74.0	72.1	70.2	68.2	68.2	68.2	75.4	74.0
19	1600	85.0	82.5	80.0	78.6	75.6	72.5	68.5	66.8	67.6	72.5	74.0
20	2000	81.4	78.7	76.2	74.2	70.6	68.7	65.4	64.4	65.1	69.2	70.0
21	2500	81.5	81.5	79.0	75.8	71.8	68.8	65.0	65.0	64.7	69.5	73.0
22	3150	80.2	80.3	78.3	75.2	70.3	67.8	63.8	63.3	63.8	69.8	70.0
23	4000	81.6	80.3	77.6	75.6	70.9	67.8	63.8	63.1	63.8	68.8	71.0
24	5000	79.0	80.2	77.4	76.4	72.2	69.4	64.9	64.5	64.7	70.2	71.0
25	6300	97.8	85.2	81.7	84.3	77.9	74.4	67.6	67.1	66.8	74.5	75.0
26	8000	98.9	89.4	86.7	83.6	81.3	79.1	67.5	67.4	64.2	70.1	70.0
27	10000	79.6	81.3	80.4	83.6	81.4	76.5	65.6	63.9	62.0	68.4	67.0
28	12500	76.8	78.2	73.3	75.0	71.7	68.1	62.8	61.5	61.9	70.0	70.0
29	16000	80.9	77.2	72.7	74.6	69.4	67.0	59.8	59.6	59.6	69.8	69.0

155

FOLDOUT FRAME

FROM THE ORIGINAL DATA.

CONFIGURATION NO 103

SPEED = 1800. RPM

PERCENT SPEED = 47.0

S S L E S S A R R A Y

ORIGINAL PAGE IS  
OF POOR QUALITYRADIUS WITH NO ATMOSPHERIC ATTENUATION  
AND DIRECTIVITY COMPUTATIONS)

0. 90. 100. 140. 150. 160. 180.

.5 91.8 92.3 97.6 96.3 97.1 97.4

.2 85.2 83.7 90.2 88.2 91.7 90.7

.2 81.7 82.8 90.0 89.0 89.5 87.7

.8 81.7 82.7 88.7 89.5 89.2 88.3

.3 84.0 85.3 89.8 88.3 87.5 87.5

.3 81.0 81.0 87.8 86.0 86.2 88.2

.2 78.0 80.0 86.8 82.3 83.5 88.5

.5 80.2 79.0 84.0 81.0 81.2 85.7

.2 77.3 77.7 81.0 79.2 79.5 82.7

.9 75.0 76.5 78.4 76.5 79.2 80.4

.9 77.2 79.5 77.2 76.2 79.7 80.9

.7 77.0 78.5 76.9 75.2 78.0 79.5

.6 75.4 76.7 74.4 72.6 76.1 77.9

.8 73.1 75.4 74.3 71.9 75.1 76.1

.1 70.3 71.6 73.1 70.5 72.1 74.5

.5 69.2 69.4 71.9 70.4 70.7 73.5

.4 73.1 72.9 76.3 76.4 73.3 75.1

.2 68.8 69.5 74.7 74.0 72.7 73.0

.2 68.2 68.2 75.4 74.6 73.4 71.1

.5 66.8 67.6 72.5 74.0 71.0 69.5

.4 64.4 65.1 69.2 70.1 69.1 67.9

.0 65.0 64.7 69.5 73.2 69.0 68.0

.8 63.3 63.8 69.8 70.8 68.7 66.3

.8 63.1 63.8 68.8 71.6 68.1 66.1

.9 64.5 64.7 70.2 71.5 68.4 67.0

.6 67.1 66.8 74.5 75.1 72.3 70.3

.5 67.4 64.2 70.1 70.5 68.1 67.3

.6 63.9 62.0 68.4 67.7 65.2 66.7

.8 61.5 61.9 70.0 70.2 68.7 72.3

.8 59.6 59.6 69.8 69.0 67.5 72.3

155

FOLDOUT FRAME

2

# *SPL* LOSSLESS DATA AT 100 FOOT RADIUS

CCSEE CTW ENGINE

BULK ABSORBER INLET

ORIGINAL PAGE IS  
OF POOR QUALITY

3000 FT. RUNWAY CORNER

ENGINE WITH APPROACH FLAPS

READING NUMBERS = 57 58 59 60

CONFIGURATION NO = 103

SPEED = 3650. RPM

TEMPERATURE = 72.0 F

RELATIVE HUMIDITY = 98.0 PC

## *SIDELINE PLANE* ROOM MICROPHONES - LOSSLESS DATA

MIC # 14 15 16 17

R 0. 31. 43. 54.

THETA,  $\theta_s$  90. 90. 90. 90.

Z 106. 91. 86. 81.

DISTANCE 91. 82. 33. 96.

PHI,  $\phi$  0. 22. 31. 39.

INDEX FREQ

1	25.	94.5	94.5	97.5	98.5
2	32.	95.9	97.0	102.0	102.0
3	40.	97.4	96.6	100.2	103.8
4	50.	99.1	100.3	101.3	102.5
5	63.	98.9	100.4	100.0	101.7
6	80.	98.8	99.3	99.6	101.5
7	100.	99.0	98.8	99.2	102.3
8	125.	98.6	99.9	100.7	102.3
9	160.	96.9	98.4	99.4	102.4
10	200.	97.0	98.5	100.2	101.5
11	250.	96.3	97.5	98.9	101.3
12	315.	95.8	98.8	99.9	101.1
13	400.	95.7	98.2	99.0	100.3
14	500.	95.5	97.6	98.0	99.2
15	630.	94.0	96.1	96.8	97.9
16	800.	93.9	95.6	95.8	96.9
17	1000.	93.2	94.0	94.4	96.2
18	1250.	92.0	93.4	93.5	94.6
19	1600.	93.0	93.0	92.2	93.1
20	2000.	90.4	90.7	91.2	91.4
21	2500.	88.0	88.5	89.1	90.5
22	3150.	88.1	87.4	88.3	89.6
23	4000.	87.8	86.4	87.4	88.4
24	5000.	87.9	84.8	86.4	87.5
25	6300.	87.8	83.7	86.2	87.4
26	8000.	85.9	81.5	84.7	85.7
27	10000.	86.4	79.1	83.8	84.2
28	12500.	87.0	76.3	81.7	82.4
29	16000.	86.9	74.7	81.0	80.9

OASPL

109.7 110.7 111.9 113.6

FOLDOUT FRAME

ORIGINAL PAGE IS  
OF POOR QUALITY

S

59 60

SPEED = 3650. RPM

PERCENT SPEED 95.0

FGK 19108

VE HUMIDITY = 98.0 PC

BAROMETER = 29.36 IN HG

XMu .788

SS. 59

156

FOLDOUT FRAME

2

DATA OF 920. SURSET NO. 59. READINGS 57 58 59 60

QCSEE OTW ENGINE  
BULK ABSORBER INLET  
3000 FT. RUNWAY CONF.  
ENGINE WITH APPROACH FLAPS

*SPL* LOSSLESS ARRAY

*FLYSUR PLANE* DATA AT 100.0 FT RADIUS WITH NO ATMOSPHER  
(FOR POWER AND DIRECTIVITY COMPUTA

*ENGINE CENTERLINE MICROPHONES*

ANGLE,  $\theta$  60. 90. 150.

COMPUTED OASPL 118.3 120.2 126.3

BAND FREQUENCY

1	25	107.6	108.1	114.0
2	32	108.9	109.0	114.3
3	40	111.3	111.4	118.1
4	50	109.5	114.6	120.8
5	63	107.5	112.3	119.9
6	80	109.2	109.4	117.3
7	100	107.7	107.7	112.3
8	125	105.0	105.5	108.7
9	160	101.3	103.2	104.5
10	200	99.2	99.9	104.7
11	250	99.1	100.6	103.7
12	315	99.6	101.7	103.9
13	400	100.0	102.7	101.8
14	500	99.0	101.1	100.1
15	630	98.4	99.4	98.9
16	800	98.1	98.6	99.0
17	1000	96.9	97.2	97.9
18	1250	97.4	95.6	97.0
19	1600	95.1	94.1	96.2
20	2000	94.0	92.9	94.8
21	2500	92.9	92.2	93.8
22	3150	90.6	90.8	93.0
23	4000	89.2	88.5	92.1
24	5000	89.8	88.7	89.8
25	6300	89.7	89.6	91.5
26	8000	84.6	85.1	99.3
27	10000	85.9	84.1	89.2
28	12500	82.0	81.8	91.1
29	16000	83.8	83.9	93.9

157

FOLDOUT FRAME

CONFIGURATION NO 103  
SPEED = 3650. RPM  
PERCENT SPEED = 95.0

D S S L E S S A R R A Y

T RADIUS WITH NO ATMOSPHERIC ATTENUATION  
ER AND DIRECTIVITY COMPUTATIONS)

157

FOLDOUT FRAME

2



DATA OF 920. SURSET NO. 59. READINGS 57 58 59 60

SIX DECIBELS HAVE BEEN SUBTRACTED FROM THE ORIGINAL DATA.  
 OCSEE OTW ENGINE  
 BULK ABSORBER INLET  
 3000 FT. RUNWAY CONE.  
 ENGINE WITH APPROACH FLAPS

ORIGINAL PAGE IS  
 OF POOR QUALITY

SPL LOSSLESS ARRAY

FLYOVER PLANE DATA AT 100.0 FT RADIUS WITH NO. ATMOSPHERIC  
 (FOR POWER AND DIRECTIVITY COMPUTATION)

ANGLE,  $\theta$  0. 20. 40. 50. 60. 70. 80. 90. 100. 140. 150.

COMPUTED DASPL 111.1 112.9 113.1 113.4 114.3 113.9 114.9 115.7 116.3 113.9 121.

BAND FREQUENCY

1	25	96.9	101.4	101.4	103.4	102.1	103.3	104.5	104.3	104.5	102.4	105.
2	32	100.4	103.3	103.4	104.6	106.4	104.5	104.5	104.3	105.4	105.3	109.
3	40	101.6	105.5	105.5	104.0	105.8	103.0	104.0	107.0	109.0	107.8	112.
4	50	104.1	105.6	105.8	105.8	104.9	103.1	106.0	109.0	109.1	108.5	115.
5	63	102.9	104.4	103.9	101.5	102.0	103.8	105.8	106.4	108.3	105.5	115.
6	80	101.3	102.1	99.9	100.3	104.4	104.5	105.8	105.8	106.5	100.6	114.
7	100	98.3	96.8	98.0	102.5	104.5	102.8	102.8	102.4	102.3	95.3	110.
9	125	98.6	97.0	102.3	102.9	102.0	102.5	102.9	102.5	101.8	94.0	106.
9	160	95.6	99.8	99.9	98.1	99.4	100.8	101.5	101.3	100.9	91.0	103.
10	200	94.6	98.1	95.5	98.0	98.4	99.5	101.3	101.6	101.3	92.1	102.
11	250	92.9	94.8	95.7	97.3	97.9	98.9	99.7	100.7	98.4	91.4	99.
12	315	93.6	95.3	96.8	96.9	97.9	98.4	99.4	98.3	97.8	90.6	98.
13	400	91.3	95.2	95.5	95.5	95.9	97.6	99.2	97.7	97.1	90.0	98.
14	500	90.6	92.5	93.5	94.2	95.7	96.7	97.7	96.2	95.7	88.4	95.
15	630	89.9	92.2	93.7	93.9	94.9	95.5	95.9	94.9	94.7	87.9	95.
16	800	87.6	91.7	92.7	93.8	95.1	95.2	95.2	94.5	93.6	88.6	94.
17	1000	90.4	91.5	91.2	92.2	93.3	94.7	94.4	93.0	92.9	89.8	94.
18	1250	98.1	91.5	90.3	92.0	92.7	93.7	92.7	91.7	91.3	89.2	94.
19	1600	86.5	89.4	90.5	90.0	91.9	92.5	91.4	91.7	90.4	89.3	95.
20	2000	84.8	88.5	88.9	89.1	91.0	91.6	90.4	89.6	88.4	88.0	92.
21	2500	88.0	86.6	88.1	88.6	90.2	90.6	88.5	88.5	87.2	86.5	91.
22	3150	83.9	85.5	86.5	87.6	88.6	89.2	87.4	87.1	85.9	85.6	90.
23	4000	82.9	84.3	85.9	86.7	87.4	89.4	86.1	86.3	85.2	84.7	89.
24	5000	81.6	83.5	84.6	85.5	86.0	87.0	85.1	85.1	84.9	83.9	88.
25	6300	79.2	82.1	83.2	84.2	85.3	85.8	84.2	84.2	83.7	82.6	88.
26	8000	77.2	79.2	80.8	81.7	82.8	83.4	81.4	82.2	81.8	80.1	85.
27	10000	75.6	78.5	80.3	80.6	82.1	81.9	80.6	80.3	80.3	77.8	83.
28	12500	75.0	76.8	78.0	77.8	79.3	78.9	77.4	77.6	77.5	76.3	85.
29	16000	77.9	77.8	77.7	77.7	77.5	77.8	77.7	77.7	77.7	78.2	87.

158

FOLDOUT FRAME

FROM THE ORIGINAL DATA.

CONFIGURATION NO 103  
SPEED = 3650. RPM  
PERCENT SPEED = 95.0

SSLESS ARRAY

ORIGINAL PAGE IS  
OF POOR QUALITY

RADIUS WITH NO. ATMOSPHERIC ATTENUATION  
AND DIRECTIVITY COMPUTATIONS)

0. 90. 100. 140. 150. 160. 180.

.9 115.7 116.3 113.9 121.5 124.4 124.3

.5 104.3 104.5 102.4 105.8 106.8 105.3

.5 104.3 105.4 105.3 109.5 110.9 108.9

.0 107.0 109.0 107.8 112.0 113.9 113.1

.0 109.0 109.1 108.5 115.3 116.0 114.9

.8 106.4 108.3 105.5 115.0 116.8 117.6

.8 105.8 106.5 100.6 114.0 116.5 115.3

.8 102.4 102.3 95.3 110.1 114.5 113.4

.9 102.5 101.8 94.0 106.6 113.4 112.5

.5 101.3 100.9 91.0 103.5 111.3 111.8

.3 101.6 101.3 92.1 102.5 110.9 112.3

.7 100.7 98.4 91.4 99.4 108.0 110.7

.4 98.3 97.8 90.6 98.8 107.1 109.3

.2 97.7 97.1 90.0 98.3 105.0 108.5

.7 96.2 95.7 88.4 95.9 103.2 106.4

.9 94.9 94.7 87.9 95.0 102.0 105.0

.2 94.5 93.6 88.6 94.7 101.6 104.2

.4 93.0 92.9 89.8 94.4 99.9 102.7

.7 91.7 91.3 89.2 94.1 98.8 101.2

.4 91.7 90.4 89.3 95.2 97.7 100.0

.4 89.6 88.4 88.0 92.5 96.6 98.8

.5 88.5 87.2 86.5 91.5 95.5 96.7

.4 87.1 85.9 85.6 90.6 93.6 95.4

.1 86.3 85.2 84.7 89.8 92.4 93.4

.1 85.1 84.9 83.9 88.5 90.7 92.0

.2 84.2 83.7 82.6 88.0 89.6 90.8

.4 82.2 81.8 80.1 85.1 86.4 88.2

.6 80.3 80.3 77.8 83.8 85.5 87.6

.4 77.6 77.5 76.3 85.0 85.0 86.5

.7 77.7 77.7 78.2 87.9 87.9 87.8

158

# *SPL* LOSSLESS DATA AT 100 FOOT RADIUS

QCSEE OTW ENGINE

BELLMOUTH HARDWALL INLET

TRT NAC, SPLITTER, TRT CORE

ENGINE WITH T.O. FLAPS

READING NUMBERS = 61 62 63

CONFIGURATION NO = 216

SPEED = 1852. RPM

TEMPERATURE = 51.0 F

RELATIVE HUMIDITY = 53.0 PC

## *SIDELINE PLANE* BOOM MICROPHONES - LOSSLESS DATA

MIC # 14 15 16 17 18

R 0. 17. 31. 43. 54.

THETA,  $\theta_s$  90. 90. 90. 90. 90.

Z 106. 98. 91. 86. 81.

DISTANCE 91. 85. 82. 83. 86.

PHI,  $\phi$  0. 11. 22. 31. 39.

INDEX FREQ

1	25.	80.5	76.7	76.9	80.7	80.2
2	32.	81.1	77.2	80.6	81.7	83.7
3	40.	82.3	79.2	79.6	81.7	82.0
4	50.	82.6	82.5	83.4	85.3	87.7
5	63.	87.3	85.6	82.6	83.5	85.2
6	80.	83.0	81.6	80.4	80.5	81.3
7	100.	80.0	78.1	77.4	78.0	80.3
8	125.	79.5	78.4	78.3	79.7	80.3
9	160.	77.2	76.1	76.3	77.0	78.2
10	200.	78.3	78.2	78.4	78.7	79.8
11	250.	76.8	75.6	76.1	77.0	77.8
12	315.	75.3	73.9	74.1	75.2	76.2
13	400.	73.4	72.3	71.5	72.7	73.0
14	500.	71.7	70.8	71.0	71.6	72.4
15	630.	73.2	70.9	70.3	71.2	71.6
16	800.	80.7	78.8	78.2	80.1	78.4
17	1000.	76.1	74.6	73.2	74.6	74.4
18	1250.	74.3	73.2	72.1	71.8	72.1
19	1600.	75.2	74.2	73.8	73.7	74.0
20	2000.	71.3	70.8	70.4	71.1	71.3
21	2500.	70.1	71.1	69.2	70.4	71.4
22	3150.	68.0	67.9	66.0	67.3	68.0
23	4000.	68.1	66.5	64.7	66.2	66.3
24	5000.	70.0	68.5	65.1	67.0	67.2
25	6300.	74.3	73.4	69.0	71.1	71.0
26	8000.	73.6	75.0	67.7	71.0	71.1
27	10000.	72.8	72.5	64.1	68.6	69.1
28	12500.	77.9	73.9	62.2	67.0	66.8
29	16000.	71.3	67.8	59.5	62.1	62.2

OASPL 93.4 91.8 91.1 92.4 93.6

FOLDOUT FRAME 1

159

3  
SPEED = 1852. RPM

PERCENT SPEED 47.0

FGK 4519

HUMIDITY = 53.0 PC

BAROMETER = 29.59 IN HG

XMH .284

UT FRAME /

159

FOLDOUT FRAME

55. 60

2

13198

DATA OF 1017. SUBSET NO. 60. READINGS 61 62 63

QCSEE OTW ENGINE  
BELLMOUTH HARDWALL INLET  
TRT NAC, SPLITTER, TRT CORE  
ENGINE WITH T.O. FLAPS

SPL LOSSLESS ARRAY

FLYOVER PLANE DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERIC  
(FOR POWER AND DIRECTIVITY COMPUTATION)

ENGINE CENTERLINE MICROPHONES

ANGLE,  $\theta$ , 60. 90.

COMPUTED DASPL 96.8 97.5

BAND FREQUENCY

1	25	86.9	90.5
2	32	88.0	88.0
3	40	86.4	86.7
4	50	87.2	89.9
5	63	85.4	89.7
6	80	80.7	86.0
7	100	79.2	83.4
8	125	78.0	80.7
9	160	73.9	78.2
10	200	74.2	77.6
11	250	72.1	77.9
12	315	72.6	77.4
13	400	73.3	75.6
14	500	69.6	74.1
15	630	70.3	73.6
16	800	84.7	82.3
17	1000	78.9	77.2
18	1250	77.9	73.8
19	1600	83.2	75.2
20	2000	80.5	72.9
21	2500	80.6	73.6
22	3150	77.8	70.0
23	4000	76.1	67.4
24	5000	74.6	69.0
25	6300	80.8	74.1
26	8000	87.2	72.2
27	10000	84.2	69.3
28	12500	73.6	68.0
29	16000	77.4	73.1

160

FOLDOUT FRAME /

CONFIGURATION NO 216  
SPEED = 1852. RPM  
PERCENT SPEED = 47.0

S S L E S S   A R R A Y

RADIUS WITH NO ATMOSPHERIC ATTENUATION  
(AND DIRECTIVITY COMPUTATIONS)

160

FOLDOUT FRAME

2

DATA OF 1017. SUBSET NO. 60. READINGS 61 62 63

SIX DECIBELS HAVE BEEN SUBTRACTED FROM THE ORIGINAL DATA.

QC SEE OTW ENGINE

BELLMOUTH HARDWALL INLET

TRT NAC, SPLITTER, TRT CORE

ENGINE WITH T.O. FLAPS

ORIGINAL PAGE IS  
OF POOR QUALITY

SPL

LOSSLESS ARRAY

*Flyover Plane* DATA AT 100.0 FT RADIUS WITH NO ATMOSPHE  
(FOR POWER AND DIRECTIVITY COMPUT

ANGLE,  $\theta$ , 0. 30. 40. 50. 60. 70. 80. 90. 100. 110. 1

COMPUTED OASPL 103.4 97.9 99.6 97.9 97.6 95.0 93.8 94.3 94.3 94.3 9

BAND FREQUENCY

1	25	78.8	81.7	84.0	86.3	86.5	85.7	85.2	86.2	85.8	84.5	8
2	32	79.7	85.8	85.7	87.7	87.2	86.5	86.3	87.3	83.5	83.5	8
3	40	80.0	83.8	84.8	87.8	88.5	85.7	84.7	84.0	83.7	84.0	8
4	50	83.8	86.0	86.3	86.3	86.8	85.2	82.5	85.0	87.8	87.7	8
5	63	84.7	85.2	87.3	85.7	85.5	83.5	85.2	87.0	86.8	86.5	8
6	80	82.7	83.0	83.0	80.3	81.8	80.8	82.3	81.7	83.0	83.7	8
7	100	81.7	80.2	79.5	77.8	80.0	81.2	77.8	79.0	79.8	81.2	8
8	125	82.5	77.7	80.4	80.4	80.0	78.0	79.4	78.4	79.5	80.4	8
9	160	80.7	77.0	79.5	77.9	77.7	76.9	77.0	76.9	76.9	77.9	7
10	200	86.7	78.7	82.7	78.2	79.5	78.7	78.2	77.7	77.9	78.9	8
11	250	82.2	77.1	77.0	76.2	76.1	76.6	75.2	76.1	76.6	77.1	7
12	315	76.1	75.6	74.9	74.4	75.6	75.6	74.2	74.4	75.7	75.4	7
13	400	74.9	73.6	73.1	72.7	73.9	72.6	71.2	71.4	72.1	73.2	7
14	500	74.9	72.8	72.9	72.6	72.8	71.1	69.9	69.9	71.9	72.4	7
15	630	77.0	75.3	75.1	73.8	74.0	71.3	69.8	69.8	70.3	70.9	7
16	800	92.0	89.5	86.6	87.1	87.3	81.1	79.8	75.6	76.3	76.8	7
17	1000	87.5	83.8	82.4	81.8	81.3	77.4	75.0	72.4	72.2	72.5	7
18	1250	85.1	81.4	82.3	81.1	79.4	76.1	71.9	70.3	70.1	70.6	7
19	1600	88.2	86.0	86.5	84.5	84.7	80.0	75.2	74.0	71.9	71.0	7
20	2000	85.8	82.7	82.5	82.0	81.8	77.8	72.7	70.7	69.5	68.2	6
21	2500	85.6	82.1	83.1	82.4	83.1	78.8	73.8	69.8	69.4	67.6	6
22	3150	83.7	80.5	81.0	79.6	79.1	75.1	69.3	66.6	66.1	64.5	6
23	4000	84.4	79.9	80.1	79.1	78.4	73.4	68.3	64.7	64.4	63.1	6
24	5000	84.1	80.6	80.8	79.3	78.6	74.4	68.2	65.0	63.9	63.5	6
25	6300	98.6	85.2	88.3	86.7	93.2	79.2	71.3	67.3	66.6	65.6	6
26	8000	95.7	90.0	94.7	87.7	85.6	81.2	73.4	68.5	66.3	63.7	6
27	10000	86.0	83.1	84.0	85.1	84.3	79.0	73.9	65.9	64.4	61.7	6
28	12500	91.5	76.4	80.1	76.8	76.1	71.8	65.6	62.0	62.3	63.1	6
29	16000	93.8	79.7	85.1	78.8	75.2	72.4	66.6	67.1	67.0	67.0	6

161

FOLDOUT FRAME

D FROM THE ORIGINAL DATA.

CONFIGURATION NO 216

SPEED = 1852 RPM

PERCENT SPEED = 47.0

## LOSSLESS ARRAY

ET RADIUS WITH NO ATMOSPHERIC ATTENUATION  
WER AND DIRECTIVITY COMPUTATIONS)ORIGINAL PAGE IS  
OF POOR QUALITY

80.	90.	100.	110.	120.	130.	180.
93.8	94.3	94.3	94.3	94.4	94.0	97.6

85.2	86.2	85.8	84.5	84.7	83.2	87.8
86.3	87.3	83.5	83.5	82.3	82.5	87.0
84.7	84.0	83.7	84.0	83.8	84.8	88.8
82.5	85.0	87.8	87.7	87.2	87.0	88.0
85.2	87.0	86.8	86.5	86.3	84.7	90.2
82.3	81.7	83.0	83.7	84.2	82.8	88.5
77.8	79.0	79.8	81.2	80.3	79.5	85.8
79.4	78.4	79.5	80.4	81.7	81.7	82.9
77.0	76.9	76.9	77.9	79.2	79.9	81.9
78.2	77.7	77.9	78.9	80.4	81.5	82.7
75.2	76.1	76.6	77.1	77.9	78.4	80.9
74.2	74.4	75.7	75.4	76.6	77.4	78.4
71.2	71.4	72.1	73.2	74.9	75.4	76.1
69.9	69.9	71.9	72.4	73.9	73.3	75.1
69.8	69.8	70.3	70.9	72.8	72.1	74.4
79.8	75.6	76.3	76.8	79.6	77.8	78.6
75.0	72.4	72.2	72.5	75.2	74.0	75.4
71.9	70.3	70.1	70.6	72.2	71.9	73.1
75.2	74.0	71.9	71.0	71.7	71.9	71.5
72.7	70.7	69.5	68.2	68.2	68.3	70.3
73.8	69.8	69.4	67.6	68.1	66.9	69.1
69.3	66.6	66.1	64.5	64.8	64.3	67.7
68.3	64.7	64.4	63.1	63.9	63.3	67.6
68.2	65.0	63.9	63.5	65.1	64.7	69.3
71.3	67.3	66.6	65.6	68.1	67.9	73.8
73.4	68.5	66.3	63.7	65.9	66.1	72.3
73.9	65.9	64.4	61.7	64.6	64.2	72.6
65.6	62.0	62.3	63.1	66.5	66.5	77.8
66.6	67.1	67.0	67.0	66.5	66.5	75.8

161

FOLDOUT FRAME

2



*SPL*

## LOSSLESS DATA AT 100 FOOT RADIUS

QCSEE DTW ENGINE

BELLMOUTH HARDWALL INLET

TRT NAC, SPLITTER, TRT CORE

ENGINE WITH T.O. FLAPS

READING NUMBERS = 64 65 66

CONFIGURATION NO = 216

SPEED = 2448. RPM

TEMPERATURE = 52.0 F

RELATIVE HUMIDITY = 48.0 PC

*SIDELINE PLANE*

BOOM MICROPHONES - LOSSLESS DATA

MIC # 14 15 16 17 18

R 0. 17. 31. 43. 54.

THETA,  $\theta$ , 90. 90. 90. 90. 90.

Z 106. 98. 91. 86. 81.

DISTANCE 91. 85. 82. 83. 86.

PHI,  $\phi$ , 0. 11. 22. 31. 39.

INDEX FREQ

1	25.	85.8	82.0	84.1	85.2	88.2
2	32.	85.8	85.7	86.8	88.5	91.2
3	40.	87.1	84.9	85.6	90.7	90.8
4	50.	87.3	88.2	89.3	92.5	93.8
5	63.	87.1	85.9	88.8	89.9	89.5
6	80.	87.6	87.9	88.9	89.2	89.8
7	100.	86.5	84.7	86.1	87.7	88.3
8	125.	87.0	85.4	86.3	87.9	88.2
9	160.	84.3	83.4	84.1	85.7	86.8
10	200.	85.5	84.4	85.3	86.2	86.5
11	250.	85.3	84.4	84.1	85.9	85.9
12	315.	82.8	81.4	83.1	83.5	85.2
13	400.	81.2	79.9	81.0	82.2	82.7
14	500.	79.9	79.1	80.0	81.2	82.0
15	630.	79.4	77.9	78.6	79.4	79.9
16	800.	79.7	78.8	78.8	79.1	80.1
17	1000.	81.1	80.2	80.7	81.0	81.6
18	1250.	85.0	84.4	84.7	86.2	86.6
19	1600.	78.0	77.3	76.8	77.4	78.2
20	2000.	78.8	78.0	77.9	78.5	79.3
21	2500.	81.1	80.7	79.9	81.0	81.0
22	3150.	78.2	77.7	76.3	77.7	78.2
23	4000.	77.8	76.6	74.9	76.7	77.4
24	5000.	77.4	76.2	73.8	75.4	76.0
25	6300.	78.0	76.7	72.3	75.1	75.5
26	8000.	78.6	75.9	70.4	73.8	74.5
27	10000.	80.0	79.0	71.5	76.0	76.2
28	12500.	79.8	77.5	68.7	74.3	74.8
29	16000.	78.7	75.0	64.3	70.7	71.0

FOLDOUT FRAME

OASPL

98.3 97.3 98.1 100.0 100.8

162

ED = 2448. RPM

PERCENT SPEED

65.0

FGK 8722

UMIDITY = 48.0 PC

BAROMETER = 29.58 IN HG

XM. 45

S.S. 61

IE

1

162

FOLDOUT FRAME

2

DATA OF 1017. SUBSET NO. 61. READINGS 64 65 66

QCSEE OTW ENGINE  
BELLMOUTH HARDWALL INLET  
TRT NAC, SPLITTER, TRT CORE  
ENGINE WITH T.O. FLAPS

ORIGINAL PAGE IS  
OF POOR QUALITY

SPL

LOSSLESS ARRAY

FLYOVER PLANE

DATA AT 100.0 FT RADIUS WITH NO ATMOSP  
(FOR POWER AND DIRECTIVITY COMPU

ENGINE CENTERLINE MICROPHONES

ANGLE,  $\theta$  60. 90.

COMPUTED OASPL 103.8 107.5

BAND FREQUENCY

1	25	94.7	101.0
2	32	95.7	99.5
3	40	95.9	99.5
4	50	95.4	99.4
5	63	90.4	96.5
6	80	88.9	94.5
7	100	87.9	92.9
8	125	86.0	92.2
9	160	83.4	89.1
10	200	82.4	86.7
11	250	82.4	87.4
12	315	81.1	87.8
13	400	80.4	85.9
14	500	78.3	84.6
15	630	76.8	83.6
16	800	79.7	83.2
17	1000	85.1	84.9
18	1250	91.5	89.8
19	1600	84.1	80.0
20	2000	86.1	81.6
21	2500	90.0	85.2
22	3150	86.1	80.4
23	4000	84.6	78.1
24	5000	82.7	78.4
25	6300	82.4	79.1
26	8000	86.6	75.6
27	10000	89.4	80.4
28	12500	85.0	79.3
29	16000	83.6	83.4

163

FOLDOUT FRAME 1

CONFIGURATION NO 216  
SPEED = 2448. RPM  
PERCENT SPEED = 65.0

O S S L E S S A R R A Y

ORIGINAL PAGE 18  
OF POOR QUALITY

(RADIUS WITH NO ATMOSPHERIC ATTENUATION  
AND DIRECTIVITY COMPUTATIONS)

163

FOLDOUT FRAME 2

DATA OF 1017. SUBSET NO. 61. READINGS 64 65 66

SIX DECIBELS HAVE BEEN SUBTRACTED FROM THE ORIGINAL DATA.  
QCSEE OTW ENGINE  
BELLMOUTH HARDWALL INLET  
TRT NAC, SPLITTER, TRT CORE  
ENGINE WITH T.O. FLAPS

ORIGINAL PAGE IS  
OF POOR QUALITY

SPL LOSSLESS ARRAY

*Flyover Plane* DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERIC A  
(FOR POWER AND DIRECTIVITY COMPUTATIONS)

ANGLE,  $\theta$ , 0. 30. 40. 50. 60. 70. 80. 90. 100. 110. 120.

COMPUTED OASPL 103.3 103.6 105.0 104.4 104.3 102.1 101.2 102.7 103.1 102.9 103.6 10

BAND FREQUENCY

1	25	85.8	89.7	93.5	91.8	95.7	92.0	91.8	95.7	95.0	93.3	93.0
2	32	86.7	92.5	93.5	93.0	96.2	93.8	90.8	94.2	94.0	92.3	94.3
3	40	87.7	92.2	94.0	94.7	95.7	92.8	93.0	92.3	92.8	93.8	95.7
4	50	89.5	95.0	96.2	93.0	94.2	90.2	92.5	94.8	95.8	96.2	95.0
5	63	89.5	92.2	93.0	91.7	89.7	89.0	90.8	93.2	93.2	92.3	92.7
6	80	89.0	90.7	90.2	87.0	89.2	89.8	89.8	91.3	92.3	92.7	93.0
7	100	88.8	87.5	85.8	86.5	88.3	88.0	87.2	88.3	90.0	89.8	89.8
8	125	88.4	84.9	87.0	88.5	89.4	87.2	88.2	88.2	89.2	90.2	92.2
9	160	86.4	84.7	86.5	85.9	86.5	85.5	86.4	86.0	87.4	88.2	89.0
10	200	87.0	85.5	86.5	85.4	86.5	86.5	85.2	86.2	87.5	88.0	90.0
11	250	84.2	83.6	84.2	83.7	85.6	85.9	84.9	85.1	86.1	86.7	89.1
12	315	81.6	81.7	81.9	82.2	84.4	84.9	83.9	84.2	85.7	85.9	87.9
13	400	79.1	80.2	81.2	80.9	83.1	82.7	82.1	81.9	82.2	84.2	86.4
14	500	78.3	77.9	79.3	78.9	81.4	79.6	79.3	80.3	82.1	82.8	84.8
15	630	78.8	79.1	79.8	79.0	80.3	79.1	78.6	79.6	80.8	81.9	83.3
16	800	82.8	81.5	82.0	81.0	81.7	80.2	78.3	78.6	80.1	81.3	82.6
17	1000	89.7	88.2	89.0	89.2	96.2	85.0	80.2	79.7	80.4	81.5	82.4
18	1250	96.1	94.9	95.9	97.8	92.6	91.8	85.6	84.1	83.8	83.8	83.9
19	1600	88.7	87.5	87.9	86.2	85.4	83.0	78.2	77.4	77.2	77.2	77.5
20	2000	88.7	88.4	89.1	88.1	87.1	84.9	80.7	78.4	77.9	77.1	76.7
21	2500	90.3	90.7	93.0	92.0	90.5	87.7	85.2	81.3	79.8	77.8	77.1
22	3150	88.1	87.6	89.0	88.4	86.7	84.6	79.7	77.2	76.1	74.4	73.9
23	4000	87.6	87.1	88.1	87.2	86.0	83.5	79.4	76.2	75.0	72.7	72.7
24	5000	86.9	86.5	87.5	86.7	84.9	82.3	78.2	76.2	73.3	70.7	71.4
25	6300	88.8	86.9	87.4	86.5	84.1	80.9	77.1	74.4	71.6	69.4	71.1
26	8000	91.2	89.1	89.2	87.3	84.3	80.3	76.0	72.7	69.9	67.2	69.9
27	10000	91.7	87.9	91.9	89.6	88.1	85.2	80.0	75.3	71.0	68.9	70.8
28	12500	99.1	86.4	89.3	89.2	85.8	82.6	79.3	75.1	72.7	72.8	72.7
29	16000	88.9	84.6	87.2	84.5	80.8	78.9	77.1	77.2	77.5	77.5	77.5

164

FOLDOUT FRAME /

THE ORIGINAL DATA.

CONFIGURATION NO 216

SPEED = 2448. RPM

PERCENT SPEED = 65.0

LESS ARRAY

ORIGINAL PAGE IS  
OF POOR QUALITY

US WITH NO ATMOSPHERIC ATTENUATION  
(DIRECTIVITY COMPUTATIONS)

90. 100. 110. 120. 130. 140.

102.7 103.1 102.9 103.6 103.7 108.0

95.7	95.0	93.3	93.0	94.3	99.5
94.2	94.0	92.3	94.3	92.3	99.7
92.3	92.8	93.8	95.7	93.2	97.3
94.8	95.8	96.2	95.0	96.2	99.3
93.2	93.2	92.3	92.7	94.7	98.3
91.3	92.3	92.7	93.0	93.2	98.3
88.3	90.0	89.8	89.8	91.7	96.2
88.2	89.2	90.2	92.2	91.7	95.2
86.0	87.4	88.2	89.0	90.4	94.5
86.2	87.5	88.0	90.0	91.4	93.7
85.1	86.1	86.7	89.1	87.9	91.2
84.2	85.7	85.9	87.9	87.4	88.6
81.9	82.2	84.2	86.4	85.4	86.9
80.3	82.1	82.8	84.8	83.6	85.1
79.6	80.8	81.9	83.3	81.4	84.0
78.6	80.1	81.3	82.6	81.6	84.5
79.7	80.4	81.5	82.4	80.0	83.4
84.1	83.8	83.8	83.9	83.3	83.6
77.4	77.2	77.2	77.5	76.0	80.5
78.4	77.9	77.1	76.7	75.7	80.0
81.3	79.8	77.8	77.1	76.8	79.0
77.2	76.1	74.4	73.9	72.9	77.9
76.2	75.0	72.7	72.7	71.9	77.4
76.2	73.3	70.7	71.4	71.0	76.7
74.4	71.6	69.4	71.1	70.3	77.5
72.7	69.9	67.2	69.9	68.8	77.1
75.3	71.0	68.9	70.8	69.3	78.4
75.1	72.7	72.8	72.7	72.8	77.3
77.2	77.5	77.5	77.5	77.5	80.1

164

FOLDOUT FRAME 2

13138

# SPL LOSSLESS DATA AT 100 FOOT RADIUS

QCSEE OTW ENGINE

BELLMOUTH HARDWALL INLET

TRI MAC, SPLITTER, TRI CORE

ENGINE WITH T.O. FLAPS

READING NUMBERS = 67 68 69

CONFIGURATION NO = 216

SPEED = 3051. RPM

TEMPERATURE = 73.0 F

RELATIVE HUMIDITY = 46.0 PC

## SIDELINE PLANE BOOM MICROPHONES - LOSSLESS DATA

MIC # 14 15 16 17 18

R 0. 17. 31. 43. 54.

THETA,  $\theta_s$  90. 90. 90. 90. 90.

Z 106. 98. 91. 86. 81.

DISTANCE 91. 85. 82. 83. 86.

PHI,  $\phi$  0. 11. 22. 31. 39.

INDEX FREQ

1	25.	92.8	86.5	90.1	91.7	93.2
2	32.	90.3	90.4	93.3	93.7	94.8
3	40.	90.9	90.5	92.3	94.7	95.0
4	50.	98.4	94.0	94.9	95.5	99.8
5	63.	94.5	93.0	93.6	93.7	94.8
6	80.	94.1	92.9	93.1	94.4	95.3
7	100.	92.0	91.2	91.3	92.7	94.2
8	125.	93.0	91.4	92.6	93.9	94.5
9	160.	91.0	89.9	90.9	91.9	93.7
10	200.	92.0	90.4	90.4	92.0	93.8
11	250.	90.2	89.6	90.6	91.7	92.2
12	315.	89.4	87.9	90.1	90.7	92.2
13	400.	88.5	87.1	88.6	89.6	90.2
14	500.	89.1	86.8	88.2	88.9	89.7
15	630.	86.4	85.3	86.7	87.1	87.9
16	800.	87.1	86.0	87.0	87.1	87.8
17	1000.	86.6	84.9	85.7	86.5	86.8
18	1250.	89.3	87.1	89.1	89.2	89.3
19	1600.	94.7	91.6	94.1	97.3	97.1
20	2000.	93.8	83.1	83.5	83.9	84.8
21	2500.	84.7	84.6	84.4	85.7	86.2
22	3150.	88.0	88.4	87.7	89.8	89.8
23	4000.	84.9	84.7	83.1	84.4	85.0
24	5000.	84.3	84.1	81.9	83.5	84.2
25	6300.	83.6	83.4	80.4	83.4	83.4
26	8000.	81.1	80.7	76.8	80.5	81.3
27	10000.	80.8	80.5	74.1	79.0	79.1
28	12500.	80.3	78.4	70.2	76.8	76.9
29	16000.	80.4	78.2	68.9	76.5	76.2

FOLDOUT FRAME 1

165

OASPL 105.3 103.4 104.4 105.7 107.0

D = 3051. RPM

PERCENT SPEED

81.0

FGK 14341

MIDITY = 46.0 PC

BAROMETER = 29.58 IN HG

XM11 .578

S.S. 62

AME 1

165

FOLDOUT FRAME

2

13126



DATA OF 1017. SUBSET NO. 62. READINGS 67 68 69

QCSEE OTW ENGINE  
BELLMOUTH HARDWALL INLET  
TRT NAC, SPLITTER, TRT CORE  
ENGINE WITH I.O. FLAPS

*SPL* LOSSLESS ARRAY

*FLYOVER PLANE*

DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERE  
(FOR POWER AND DIRECTIVITY COMPUTATION)

*ENGINE CENTERLINE MICROPHONES*

ANGLE,  $\theta$  60. 90.

COMPUTED OASPL 108.9 112.7

BAND FREQUENCY

1	25	99.0	100.5
2	32	100.0	102.5
3	40	101.5	104.4
4	50	100.7	103.9
5	63	97.4	105.2
6	80	94.9	102.5
7	100	94.2	99.5
8	125	94.2	98.9
9	160	90.9	95.0
10	200	88.4	92.4
11	250	87.2	92.9
12	315	87.8	93.9
13	400	88.3	93.3
14	500	86.3	93.0
15	630	85.2	91.5
16	800	86.2	91.1
17	1000	86.4	90.3
18	1250	91.7	93.2
19	1600	96.9	101.6
20	2000	87.5	86.6
21	2500	90.5	88.5
22	3150	94.7	92.1
23	4000	89.4	86.6
24	5000	87.0	86.4
25	6300	85.5	86.7
26	8000	87.0	82.1
27	10000	84.0	80.2
28	12500	79.7	77.8
29	16000	81.8	79.9

166

FOLDOUT FRAME

CONFIGURATION NO 216  
SPEED = 3051. RPM  
PERCENT SPEED = 81.0

LOSSLESS ARRAY

RADIUS WITH NO ATMOSPHERIC ATTENUATION  
AND DIRECTIVITY COMPUTATIONS)

166

FOLDOUT FRAME

2

DATA OF 1017. SUBSET NO. 62. READINGS 67 68 69

SIX DECIBELS HAVE BEEN SUBTRACTED FROM THE ORIGINAL DATA.  
 QCSEE CTW ENGINE  
 BELLMOUTH HARDWALL INLET  
 TRT NAC. SPLITTER, TRT CORE  
 ENGINE WITH T.O. FLAPS

*SPL* LOSSLESS ARRAY

ORIGINAL PAGE IS  
 OF POOR QUALITY

*FLYOVER PLANE*

DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERIC  
 (FOR POWER AND DIRECTIVITY COMPUTATION)

ANGLE,  $\theta$  0. 30. 40. 50. 60. 70. 80. 90. 100. 110. 120.  
 COMPUTED OASPL 106.8 107.5 108.3 108.2 109.0 107.8 107.4 108.5 109.8 112.6 112.1

BAND FREQUENCY

1	25	89.8	94.7	96.5	95.2	99.0	97.2	97.7	97.7	100.3	104.7	100.7
2	32	90.5	96.7	98.0	98.0	100.0	98.8	98.5	100.7	99.3	102.7	102.3
3	40	91.5	98.8	99.7	100.5	101.2	98.5	97.8	98.8	101.7	104.5	103.3
4	50	95.0	99.5	100.2	99.5	99.0	98.0	97.8	99.7	102.3	104.3	104.0
5	63	94.3	97.2	98.5	97.0	96.0	95.7	97.8	99.2	98.7	102.2	100.5
6	80	96.3	95.7	94.5	92.7	94.7	96.2	95.7	97.2	98.7	101.5	100.3
7	100	96.0	92.0	91.5	92.5	94.8	95.5	94.2	96.0	98.0	99.7	100.0
8	125	95.2	90.4	93.2	93.4	95.5	94.7	95.9	94.9	97.4	100.4	100.7
9	160	92.4	91.0	92.4	92.2	93.4	92.7	93.9	93.9	94.7	97.7	98.9
10	200	91.5	91.0	91.5	91.4	91.5	92.0	92.4	94.2	96.0	98.2	99.5
11	250	88.2	87.9	88.9	88.6	90.7	90.9	91.2	92.4	92.6	95.4	98.6
12	315	85.7	86.7	87.9	88.1	89.7	90.6	90.7	91.4	93.1	94.9	97.1
13	400	84.8	85.3	87.1	87.8	88.8	88.6	88.9	89.8	90.4	93.4	96.1
14	500	83.8	84.1	86.0	86.2	87.5	86.3	87.1	88.5	90.1	92.3	94.6
15	630	82.8	83.7	85.0	85.2	86.2	85.7	86.5	87.8	88.8	91.3	92.8
16	800	84.9	84.5	85.5	85.9	87.7	86.7	86.5	86.7	88.0	90.5	92.0
17	1000	86.1	85.8	86.6	86.1	86.9	85.9	85.1	86.1	87.9	89.3	90.1
18	1250	91.6	91.0	91.5	92.0	91.5	89.6	87.8	86.6	88.0	88.5	89.1
19	1600	97.7	96.2	96.5	98.0	97.5	98.1	92.2	90.7	91.4	91.0	90.4
20	2000	90.3	89.5	90.1	88.8	88.0	85.1	83.6	84.1	84.6	85.1	85.1
21	2500	93.0	91.8	92.3	91.8	92.2	87.7	85.5	85.5	85.0	84.6	84.1
22	3150	96.0	95.7	96.4	96.0	96.7	91.2	87.9	88.9	87.4	85.2	84.0
23	4000	93.1	91.7	91.7	91.6	91.9	86.6	85.9	85.1	82.9	81.6	80.9
24	5000	91.3	90.3	90.5	90.3	90.3	86.0	84.3	83.8	81.3	79.3	79.0
25	6300	90.6	89.0	89.4	88.9	89.6	85.4	82.9	83.2	79.9	76.7	77.5
26	8000	88.8	85.4	86.9	86.3	87.1	83.1	79.2	80.1	76.4	73.7	74.5
27	10000	87.6	83.3	84.7	84.5	85.2	81.5	77.2	77.7	73.8	76.0	76.0
28	12500	86.5	80.9	82.4	82.4	82.8	79.1	74.9	75.0	70.8	79.4	79.4
29	16000	87.3	81.2	83.1	82.7	81.3	77.3	75.2	75.0	74.1	84.3	84.3

167

FOLDOUT FRAME

FROM THE ORIGINAL DATA.

CONFIGURATION NO 216  
 SPEED = 3051. RPM  
 PERCENT SPEED, = 81.0

D S S L E S S A R R A Y

ORIGINAL PAGE IS  
 OF POOR QUALITY

RADIUS WITH NO ATMOSPHERIC ATTENUATION  
 R AND DIRECTIVITY COMPUTATIONS)

80. 90. 100. 110. 120. 130. 180.

7.4 108.5 109.8 112.6 112.1 111.5 117.3

7.7 97.7 100.3 104.7 100.7 100.5 101.2

8.5 100.7 99.3 102.7 102.3 103.5 106.2

7.8 98.8 101.7 104.5 103.3 102.8 110.3

7.8 99.7 102.3 104.3 104.0 103.3 110.2

7.8 99.2 98.7 102.2 100.5 101.3 108.7

5.7 97.2 98.7 101.5 100.3 99.5 107.0

4.2 96.0 98.0 99.7 100.0 100.0 105.0

5.9 94.9 97.4 100.4 100.7 99.5 105.5

3.9 93.9 94.7 97.7 98.9 97.9 103.4

2.4 94.2 96.0 98.2 99.5 98.0 103.0

1.2 92.4 92.6 95.4 98.6 94.2 100.4

0.7 91.4 93.1 94.9 97.1 94.9 98.6

8.9 89.8 90.4 93.4 96.1 92.9 96.8

7.1 88.5 90.1 92.3 94.6 90.8 94.8

6.5 87.8 88.8 91.3 92.8 89.3 93.3

6.5 86.7 88.0 90.5 92.0 89.4 92.9

5.1 86.1 87.9 89.3 90.1 86.9 92.1

7.8 86.6 88.0 88.5 89.1 86.3 90.8

2.2 90.7 91.4 91.0 90.4 88.7 91.4

3.6 84.1 84.6 85.1 85.1 82.1 88.6

5.5 85.5 85.0 84.6 84.1 81.3 87.6

7.9 88.9 87.4 85.2 84.0 82.7 87.0

5.9 85.1 82.9 81.6 80.9 78.7 85.7

4.3 83.8 81.3 79.3 79.0 77.0 84.3

2.9 83.2 79.9 76.7 77.5 75.6 83.6

9.2 80.1 76.4 73.7 74.5 73.7 81.3

7.2 77.7 73.8 76.0 76.0 76.0 80.4

4.9 75.0 70.8 79.4 79.4 79.4 80.1

5.2 75.0 74.1 84.3 84.3 84.3 84.2

167

FOLDOUT FRAME 2

SPL

LOSSLESS DATA AT 100 FOOT RADIUS

QCSEE CTW ENGINE

BELLMOUTH HARDWALL INLET

TRT NAC, SPLITTER, TRT CORE

ORIGINAL PAGE IS  
OF POOR QUALITY.

ENGINE WITH T.O. FLAPS

READING NUMBERS = 70 71 72

CONFIGURATION NO = 216

SPEED = 3240. RPM

TEMPERATURE = 73.0 F

RELATIVE HUMIDITY = 48.0 PC

*SIDELINE PLANE*

ROOM MICROPHONES - LOSSLESS DATA

MIC # 14 15 16 17 18

R 0. 17. 31. 43. 54.

THETA,  $\theta$ , 90. 90. 90. 90. 90.

Z 106. 98. 91. 86. 81.

DISTANCE 91. 85. 82. 83. 86.

PHI,  $\phi$ , 0. 11. 22. 31. 39.

INDEX FREQ

1	25.	89.6	91.5	90.1	94.3	93.8
2	32.	92.6	91.4	92.3	95.3	95.7
3	40.	93.1	92.5	93.4	95.8	97.0
4	50.	95.8	96.4	97.1	98.7	99.8
5	63.	95.1	93.4	94.6	94.8	96.5
6	80.	95.0	94.4	94.8	95.4	96.8
7	100.	94.5	92.2	92.8	94.9	96.5
8	125.	95.5	93.2	93.9	96.0	97.2
9	160.	93.2	91.4	93.3	94.9	95.8
10	200.	94.0	92.6	93.1	95.0	94.3
11	250.	93.2	91.6	92.1	93.4	94.2
12	315.	91.2	89.8	91.3	92.4	93.5
13	400.	90.9	89.3	90.8	91.7	92.4
14	500.	89.6	89.1	90.2	90.4	91.4
15	630.	88.1	87.5	88.5	89.3	89.6
16	800.	89.1	87.5	88.4	89.1	89.3
17	1000.	87.8	86.7	87.9	88.5	88.3
18	1250.	87.8	86.6	87.6	87.7	88.2
19	1600.	93.9	93.5	92.3	90.6	94.6
20	2000.	84.9	84.5	85.2	85.4	85.4
21	2500.	84.9	84.6	84.4	85.2	85.4
22	3150.	88.7	88.5	87.2	88.2	88.8
23	4000.	84.7	83.6	82.7	83.8	84.0
24	5000.	84.9	84.4	82.9	84.5	84.8
25	6300.	84.1	83.7	80.3	82.8	83.2
26	8000.	81.4	81.1	76.9	80.5	80.6
27	10000.	81.0	80.5	74.4	79.0	78.8
28	12500.	80.6	78.9	70.7	76.2	76.4
29	16000.	80.4	78.4	69.1	75.7	75.8

OASPL

105.9 105.0 105.5 107.0 108.0

FOLDOUT FRAME

ORIGINAL PAGE IS  
OF POOR QUALITY

2  
SPEED = 3240. RPM

PERCENT SPEED 86.0

FGK 16423

HUMIDITY = 48.0 PC

BAROMETER = 29.57 IN HG

XM 11 .646

S.S. 63

12440

FRAME 1

168

FOLDOUT FRAME

2

DATA OF 1017. SURSET NO. 63. READINGS 70 71 72

QCSEE OTW ENGINE  
BELLMOUTH HARDWALL INLET  
TRT NAC, SPLITTER, TRT CORE  
ENGINE WITH T.O. FLAPS

*SPL* LOSSLESS ARRAY

*FLYOVER PLANE* DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERIC  
(FOR POWER AND DIRECTIVITY COMPUTATION)

*ENGINE CENTERLINE MICROPHONES*

ANGLE  $\theta$  60. 90.

COMPUTED DASPL 110.1 114.2

RAND FREQUENCY

1	25	97.5	103.0
2	32	102.2	104.9
3	40	103.9	105.7
4	50	101.9	107.2
5	63	99.4	105.4
6	80	97.5	103.9
7	100	96.0	102.0
8	125	96.4	100.9
9	160	92.7	97.4
10	200	91.1	94.7
11	250	89.9	94.6
12	315	90.6	96.3
13	400	91.6	96.1
14	500	89.2	95.2
15	630	87.2	93.7
16	800	88.6	93.4
17	1000	88.3	92.3
18	1250	89.2	90.8
19	1600	94.9	95.1
20	2000	87.7	88.3
21	2500	89.0	88.7
22	3150	93.9	90.9
23	4000	86.9	85.2
24	5000	86.5	86.8
25	6300	83.2	86.3
26	8000	85.2	81.1
27	10000	82.4	79.2
28	12500	77.7	77.0
29	16000	80.6	79.5

169

FOLDOUT FRAME

CONFIGURATION NO 216  
SPEED = 3240. RPM  
PERCENT SPEED = 86.0

O S S L E S S   A R R A Y

RADIUS WITH NO ATMOSPHERIC ATTENUATION  
(AND DIRECTIVITY COMPUTATIONS)

165

169

FOLDOUT FRAME 2



DATA OF 1017. SUBSET NO. 63. READINGS 70 71 72

SIX DECIBELS HAVE BEEN SUBTRACTED FROM THE ORIGINAL DATA.  
QCSEE OTW ENGINE  
BELLMOUTH HARDWALL INLET  
TRT NAC, SPLITTER, TRT CORE  
ENGINE WITH T.O. FLAPS

SPL LOSSLESS ARRAY

ORIGINAL PAGE IS  
OF POOR QUALITY

FLYOVER PLANE

DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERIC  
(FOR POWER AND DIRECTIVITY COMPUTATION)

ANGLE,  $\theta$  0. 30. 40. 50. 60. 70. 80. 90. 100. 110. 120.

COMPUTED DASPL 108.2 108.6 110.0 109.4 110.4 109.2 109.3 110.9 113.1 112.3 114.1

BAND FREQUENCY

1	25	89.0	92.8	97.3	98.3	99.3	99.0	98.8	100.3	105.2	100.5	100.3
2	32	92.8	99.7	100.3	100.0	101.3	100.5	99.2	102.0	103.7	101.8	103.3
3	40	93.8	98.5	101.5	102.7	103.0	100.5	101.0	102.5	103.3	103.7	105.3
4	50	97.0	101.3	103.0	101.5	102.5	99.0	99.5	102.0	103.7	103.0	105.3
5	63	96.5	99.8	100.7	97.5	98.0	97.3	99.7	102.0	104.0	101.5	104.2
6	80	97.3	99.0	97.3	94.3	97.7	96.7	98.3	99.2	101.7	102.3	103.2
7	100	98.2	93.3	92.2	93.2	97.0	97.2	97.3	99.0	101.0	99.7	101.7
8	125	95.7	91.4	94.2	95.5	96.7	96.9	97.2	98.2	100.9	100.7	103.2
9	160	94.0	91.2	95.0	94.4	94.7	94.7	95.2	96.4	99.2	99.2	100.9
10	200	92.7	93.4	93.9	92.4	94.0	94.2	94.9	95.9	98.0	99.4	102.4
11	250	89.7	90.6	90.9	90.1	93.1	93.4	93.4	94.2	96.9	97.9	100.2
12	315	87.6	88.9	89.4	90.1	92.4	93.2	92.9	94.1	96.1	97.4	99.1
13	400	86.6	86.9	88.8	89.8	91.4	91.1	91.6	92.3	94.6	96.3	98.6
14	500	85.6	86.5	87.8	88.1	90.3	88.8	89.3	91.1	94.1	95.6	96.8
15	630	84.7	85.7	87.5	86.8	88.7	88.3	88.8	90.3	92.5	94.8	94.5
16	800	84.0	86.0	88.0	87.9	89.4	89.0	88.5	89.7	92.4	93.4	94.0
17	1000	86.0	86.9	87.4	87.6	88.4	88.1	87.4	88.6	91.1	92.3	92.3
18	1250	92.0	89.0	89.7	89.0	89.5	88.6	87.3	87.5	89.5	90.0	90.5
19	1600	99.5	95.1	98.7	96.7	97.7	97.0	95.0	94.4	92.2	92.2	90.2
20	2000	91.0	88.5	89.3	88.0	98.5	87.0	85.3	85.6	87.0	87.3	87.0
21	2500	93.6	90.5	91.0	89.8	89.6	87.6	85.8	85.6	86.6	86.0	86.0
22	3150	98.2	94.9	95.7	94.9	94.5	92.2	89.2	89.7	89.2	85.8	84.5
23	4000	91.5	89.0	89.7	89.2	88.2	86.7	84.2	83.9	83.9	81.9	81.7
24	5000	93.3	90.8	91.5	90.5	89.1	88.1	84.8	85.1	83.1	79.9	80.4
25	6300	91.1	87.8	88.9	88.1	86.9	85.4	83.0	82.1	80.8	77.1	78.6
26	8000	88.6	84.1	85.8	85.3	83.8	81.8	80.1	79.1	76.9	73.5	75.8
27	10000	87.9	82.8	84.0	83.3	82.1	80.7	78.1	77.1	75.6	75.8	75.7
28	12500	86.1	79.7	81.5	80.5	79.1	78.0	75.9	74.0	79.0	79.0	79.0
29	16000	86.6	79.9	81.7	80.9	77.3	78.0	75.7	74.0	83.9	83.9	83.9

170

FOLDOUT FRAME 1

FROM THE ORIGINAL DATA.

CONFIGURATION NO 216

SPEED = 3240. RPM

PERCENT SPEED = 86.0

S S L E S S A R R A Y

RADIUS WITH NO ATMOSPHERIC ATTENUATION  
AND DIRECTIVITY COMPUTATIONS)ORIGINAL PAGE IS  
OF POOR QUALITY

0. 90. 100. 110. 120. 130. 180.

.3 110.9 113.1 112.3 114.1 113.3 119.9

.8 100.3 105.2 100.5 100.3 102.2 102.3

.2 102.0 103.7 101.8 103.3 102.3 107.8

.0 102.5 103.3 103.7 105.3 105.5 112.2

.5 102.0 103.7 103.0 105.3 103.2 112.5

.7 102.0 104.0 101.5 104.2 104.2 112.7

.3 99.2 101.7 102.3 103.2 103.7 110.0

.3 99.0 101.0 99.7 101.7 102.0 108.3

.2 98.2 100.9 100.7 103.2 101.4 107.0

.2 96.4 99.2 99.2 100.9 100.7 106.2

.9 95.9 98.0 99.4 102.4 99.7 105.5

.4 94.2 96.9 97.9 100.2 96.6 102.9

.9 94.1 96.1 97.4 99.1 96.6 101.6

.6 92.3 94.6 96.3 98.6 94.8 99.4

.3 91.1 94.1 95.6 96.8 93.6 97.3

.8 90.3 92.5 94.8 94.5 91.5 96.0

.5 89.7 92.4 93.4 94.0 92.0 95.4

.4 88.6 91.1 92.3 92.3 89.3 94.6

.3 87.5 89.5 90.0 90.5 87.8 94.0

.0 94.4 92.2 92.2 90.2 92.4 93.7

.3 85.6 87.0 87.3 87.0 84.8 91.6

.8 85.6 86.6 86.0 86.0 83.3 90.3

.2 89.7 89.2 85.8 84.5 82.9 89.9

.2 83.9 83.9 81.9 81.7 80.2 88.5

.8 85.1 83.1 79.9 80.4 78.9 87.1

.0 82.1 80.8 77.1 78.6 77.3 85.8

.1 79.1 76.9 73.5 75.8 73.7 83.3

.1 77.1 75.6 75.8 75.7 75.8 82.9

.9 74.0 79.0 79.0 79.0 79.0 81.7

.7 74.0 83.9 83.9 83.9 83.9 83.4

170

FOLDOUT FRAME 2

# *SPL* LOSSLESS DATA AT 100 FOOT RADIUS

QCSEE OTW ENGINE

BELLMOUTH HARDWALL INLET

TRT NAC, SPLITTER, TRT CORE

ENGINE WITH T.O. FLAPS

ORIGINAL PAGE IS  
OF POOR QUALITY

PEADING NUMBERS = 73 74 75

CONFIGURATION NO = 216

SPEED = 3391. RPM

TEMPERATURE = 74.0 F

RELATIVE HUMIDITY = 46.0 PC

## *SIDELINE PLANE* BOOM MICROPHONES - LOSSLESS DATA

MIC # 14 15 16 17 18

R 0. 17. 31. 43. 54.

THETA,  $\theta_s$  90. 90. 90. 90. 90.

Z 106. 98. 91. 86. 81.

DISTANCE 91. 85. 82. 83. 86.

PHI,  $\phi$  0. 11. 22. 31. 39.

INDEX FREQ

1	25.	90.5	91.7	90.4	93.5	93.3
2	32.	92.8	92.5	93.1	95.2	97.0
3	40.	91.8	92.2	96.1	97.3	98.5
4	50.	94.0	95.7	97.4	99.8	100.8
5	63.	94.1	95.9	94.9	97.7	98.0
6	80.	94.6	96.2	96.8	97.4	98.2
7	100.	94.3	93.4	95.6	95.5	96.7
8	125.	96.5	95.2	96.8	97.7	98.7
9	160.	94.2	93.7	94.1	96.2	96.5
10	200.	95.0	93.7	95.1	96.4	96.7
11	250.	94.0	92.1	93.6	94.7	95.0
12	315.	93.2	91.4	93.6	93.9	94.5
13	400.	93.2	91.1	92.5	93.7	93.9
14	500.	92.4	90.1	92.2	92.9	93.6
15	630.	90.7	89.3	90.9	91.9	92.1
16	800.	90.8	90.0	90.7	91.1	91.4
17	1000.	90.1	88.9	89.9	90.3	90.8
18	1250.	89.3	87.6	88.8	89.4	89.5
19	1600.	91.7	91.8	91.3	91.6	91.2
20	2000.	86.9	85.8	86.0	86.8	86.9
21	2500.	85.5	84.9	84.6	85.7	86.0
22	3150.	87.0	85.9	85.2	86.0	86.5
23	4000.	85.6	83.7	82.9	84.2	84.5
24	5000.	85.1	83.6	81.6	82.8	83.5
25	6300.	84.4	82.7	79.4	81.8	82.5
26	8000.	82.1	80.3	76.1	79.4	79.6
27	10000.	82.1	79.9	73.6	77.9	78.2
28	12500.	81.8	78.5	69.8	75.5	75.8
29	16000.	82.1	78.2	68.2	74.6	75.0

OASPL

106.3 105.9 107.0 108.3 109.0

FOLDOUT FRAME

171

ORIGINAL PAGE IS  
OF POOR QUALITY

RE

75

SPEED = 3391. RPM

PERCENT SPEED

90.0

FGK 18170

WE HUMIDITY = 46.0 PC

BAROMETER = 29.57 IN HG

XMN .708

SS. 64

T FRAME

171

FOLDOUT FRAME

2

DATA OF 1017. SUBSET NO. 64. READINGS 73 74 75

QCSEE OTW ENGINE  
BELLMOUTH HARDWALL INLET  
TRT NAC, SPLITTER, TRT CORE  
ENGINE WITH T.C. FLAPS

SPL LOSSLESS ARRAY

FLYOVER PLANE

DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERIC  
(FOR POWER AND DIRECTIVITY COMPUTATION)

ENGINE CENTERLINE MICROPHONES

ANGLE,  $\theta$ , 60. 90.

COMPUTED OASPL 111.3 117.2

BAND FREQUENCY

1	25	100.0	107.4
2	32	104.5	109.7
3	40	103.5	109.0
4	50	103.0	109.4
5	63	99.7	107.7
6	80	100.0	106.5
7	100	97.9	104.0
8	125	98.0	103.2
9	160	94.4	100.0
10	200	92.6	98.1
11	250	91.2	97.2
12	315	92.1	98.6
13	400	92.8	98.6
14	500	90.8	97.8
15	630	90.5	97.5
16	800	90.2	95.9
17	1000	90.4	95.3
18	1250	89.5	92.8
19	1600	95.1	94.6
20	2000	88.0	90.2
21	2500	87.5	89.3
22	3150	89.9	90.0
23	4000	85.4	85.4
24	5000	83.6	85.8
25	6300	81.6	85.5
26	8000	82.6	80.4
27	10000	79.5	81.9
28	12500	75.6	85.2
29	16000	80.0	90.1

172

FOLDOUT FRAME

CONFIGURATION NO 216  
SPEED = 3391. RPM  
PERCENT SPEED = 90.0

S S L E S S   A R R A Y

RADIUS WITH NO ATMOSPHERIC ATTENUATION  
AND DIRECTIVITY COMPUTATIONS)

172

FOLDOUT FRAME 2

DATA OF 1017. SUBSET NO. 64. READINGS 73 74 75

SIX DECIBELS HAVE BEEN SUBTRACTED FROM THE ORIGINAL DATA.

QCSEE QTW ENGINE

BELLMOUTH HARDWALL INLET

TRT NAC. SPLITTER, TRT CORE

ENGINE WITH T.O. FLAPS

ORIGINAL PAGE IS  
OF POOR QUALITY

SPL LOSSLESS ARRAY

FLYOVER PLANE DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERIC  
(FOR POWER AND DIRECTIVITY COMPUTATION)

ANGLE,  $\theta$  0. 30. 40. 50. 60. 70. 80. 90. 100. 110. 120.

COMPUTED OASPL 109.0 109.4 110.4 110.3 111.3 110.3 110.5 112.4 113.1 114.9 116.4

BAND FREQUENCY

1	25	92.3	96.7	98.3	97.7	99.7	99.8	98.0	101.8	99.8	103.3	103.2
2	32	92.2	99.3	100.3	100.0	103.0	100.8	100.8	102.2	102.0	102.7	105.3
3	40	96.8	99.5	102.8	102.7	103.3	101.7	102.5	104.0	103.7	105.7	107.0
4	50	97.7	101.8	102.0	102.8	103.2	100.3	99.8	104.5	106.0	106.8	108.0
5	63	97.7	100.3	101.0	100.3	98.3	99.0	101.5	102.5	102.8	105.3	107.2
6	80	100.5	98.8	98.3	96.8	99.3	99.8	100.8	100.8	102.8	104.8	105.8
7	100	98.3	96.3	94.2	96.5	97.7	98.7	98.7	100.7	101.7	103.7	103.8
8	125	97.7	93.9	96.4	96.7	98.2	97.9	98.0	100.5	100.9	101.9	105.4
9	160	95.2	94.5	95.9	96.0	96.5	97.0	96.9	98.5	99.2	101.5	104.5
10	200	94.5	94.9	94.9	93.9	95.9	96.0	96.4	97.9	100.0	101.5	104.5
11	250	90.4	91.7	92.4	92.7	94.9	94.7	94.9	95.9	98.1	99.1	101.9
12	315	89.2	90.4	91.7	92.1	94.9	94.4	94.7	96.2	97.7	100.1	101.1
13	400	88.3	89.4	90.6	91.8	93.1	93.3	92.8	94.3	95.9	98.4	100.4
14	500	88.6	88.5	89.8	90.3	92.0	91.6	91.1	93.3	95.6	97.6	98.1
15	630	90.2	90.5	90.5	92.0	91.3	91.5	90.8	92.5	94.8	97.3	96.5
16	800	86.6	87.7	90.2	90.4	91.7	91.1	90.7	91.7	94.1	95.6	95.9
17	1000	88.9	87.4	90.1	88.9	91.4	90.3	89.1	90.4	93.3	94.4	94.3
18	1250	92.2	89.7	90.2	89.0	90.0	88.8	87.7	88.5	91.1	92.3	92.6
19	1600	99.9	97.4	99.4	98.0	98.9	94.4	93.9	89.7	92.4	92.5	93.2
20	2000	91.3	88.5	89.6	88.6	89.5	87.0	85.5	86.6	88.6	89.5	89.3
21	2500	91.6	88.0	89.0	88.3	88.6	86.1	84.1	85.5	87.3	88.0	88.0
22	3150	95.0	91.9	92.2	91.5	90.2	87.4	85.4	85.7	86.5	86.4	85.9
23	4000	91.4	87.7	87.6	87.4	87.1	84.1	81.2	82.9	84.2	84.1	84.1
24	5000	92.0	88.0	88.1	87.6	86.5	84.0	80.6	82.0	82.8	82.1	82.3
25	6300	90.0	85.3	86.0	85.3	84.2	81.6	78.3	80.2	80.7	79.0	80.7
26	8000	87.4	81.5	82.8	82.0	81.0	78.0	75.0	76.8	77.3	75.2	78.0
27	10000	86.6	80.1	81.3	80.4	79.3	76.7	75.8	75.7	75.7	75.8	77.2
28	12500	84.9	78.9	79.9	79.1	79.0	79.1	79.2	79.2	79.2	79.2	79.1
29	16000	86.2	84.1	83.9	84.1	84.1	84.1	84.1	84.1	84.1	84.1	84.1

173

FOLDOUT FRAME

FROM THE ORIGINAL DATA.

CONFIGURATION NO 216

SPEED = 3391. RPM

PERCENT SPEED = 90.0

MISSILE S A R P A Y

ORIGINAL PAGE IS  
OF POOR QUALITYRADIUS WITH NO ATMOSPHERIC ATTENUATION  
(AND DIRECTIVITY COMPUTATIONS)

30. 90. 100. 110. 120. 130. 180.

0.5 112.4 113.1 114.9 116.4 115.2 122.9

3.0	101.8	99.8	103.3	103.2	102.3	107.2
0.8	102.2	102.0	102.7	105.3	104.5	109.5
2.5	104.0	103.7	105.7	107.0	105.7	113.0
9.8	104.5	106.0	106.8	108.0	107.2	116.2
1.5	102.5	102.8	105.3	107.2	107.7	115.5
0.8	100.8	102.8	104.8	105.8	105.8	114.2
3.7	100.7	101.7	103.7	103.8	103.3	111.8
3.0	100.5	100.9	101.9	105.4	103.9	110.7
5.9	98.5	99.2	101.5	104.5	101.9	109.0
5.4	97.9	100.0	101.5	104.5	100.0	108.9
4.9	95.9	98.1	99.1	101.9	97.6	106.2
7.7	96.2	97.7	100.1	101.1	98.4	104.7
2.8	94.3	95.9	98.4	100.4	96.9	102.8
1.1	93.3	95.6	97.6	98.1	95.6	100.8
0.8	92.5	94.8	97.3	96.5	94.0	99.3
0.7	91.7	94.1	95.6	95.9	93.7	98.4
0.1	90.4	93.3	94.4	94.3	91.1	97.4
7.7	88.5	91.1	92.3	92.6	89.1	96.6
0.9	89.7	92.4	92.5	93.2	88.9	95.4
5.5	86.6	88.6	89.5	89.3	86.3	94.3
1.1	85.5	87.3	88.0	88.0	84.5	92.8
5.4	85.7	86.5	86.4	85.9	83.0	91.9
2.2	82.9	84.2	84.1	84.1	81.2	90.9
0.6	82.0	82.8	82.1	82.3	80.0	89.5
0.3	80.2	80.7	79.0	80.7	78.7	88.7
0.0	76.8	77.3	75.2	78.0	75.5	86.0
0.8	75.7	75.7	75.8	77.2	75.8	85.8
0.2	79.2	79.2	79.2	79.1	79.2	89.2
0.1	84.1	84.1	84.1	84.1	84.1	94.1



# SPL LOSSLESS DATA AT 100 FOOT RADIUS

QCSEE CTW ENGINE

BELLMOUTH HARDWALL INLET

TRT NAC. SPLITTER, TRT CORE

ENGINE WITH T.O. FLAPS

READING NUMBERS = 76 77 78

CONFIGURATION NO = 216

SPEED = 3578. RPM

TEMPERATURE = 73.0 F

RELATIVE HUMIDITY = 45.0 PC

## SIDELINE PLANE

ROOM MICROPHONES - LOSSLESS DATA

MIC # 14 15 16 17 18

R 0. 17. 31. 43. 54.

THETA,  $\theta_s$  90. 90. 90. 90. 90.

Z 106. 98. 91. 86. 81.

DISTANCE 91. 85. 82. 83. 86.

PHI,  $\phi$  0. 11. 22. 31. 39.

INDEX FREQ

1	25.	90.8	91.7	90.4	94.8	95.5
2	32.	92.3	91.0	94.6	97.2	98.5
3	40.	93.5	93.9	96.3	98.8	99.8
4	50.	95.5	95.4	99.1	101.7	102.2
5	63.	96.8	97.0	97.8	98.8	99.0
6	80.	96.6	97.9	98.4	99.5	99.5
7	100.	96.8	95.7	96.8	97.9	98.5
8	125.	98.2	96.9	97.6	100.4	100.3
9	160.	95.5	95.6	96.3	97.5	98.8
10	200.	96.7	95.6	96.8	97.9	98.3
11	250.	95.2	94.2	95.3	96.0	97.0
12	315.	94.7	93.9	95.1	96.4	96.9
13	400.	94.5	93.1	94.6	94.6	95.2
14	500.	93.9	92.5	93.7	94.6	95.1
15	630.	93.2	91.8	92.5	93.8	94.1
16	800.	93.1	91.8	92.9	92.8	93.4
17	1000.	92.1	90.7	91.6	92.3	92.8
18	1250.	90.5	89.7	90.4	91.0	91.2
19	1600.	90.4	89.9	89.0	89.9	89.7
20	2000.	87.9	87.3	87.3	87.8	88.4
21	2500.	86.4	85.6	85.6	86.2	87.4
22	3150.	86.0	84.9	83.7	85.3	86.2
23	4000.	86.2	84.9	82.9	84.0	84.5
24	5000.	85.4	83.6	81.1	82.9	83.6
25	6300.	84.8	83.5	79.3	81.9	82.4
26	8000.	82.9	81.1	76.2	79.2	80.1
27	10000.	82.6	81.0	73.2	77.7	78.5
28	12500.	82.9	80.1	70.2	75.0	76.0
29	16000.	83.6	80.4	69.8	75.0	75.0

OASPL 107.8 107.3 108.4 110.0 110.6

FOLDOUT FRAME

174

3  
SPEED = 3578. RPM

PERCENT SPEED 95.0

FGK 20,252

HUMIDITY = 45.0 PC

BAROMETER = 29.56 IN HG

XMH .789

S.S. 65

12278

FRAME 1

174

FOLDOUT FRAME 2

DATA OF 1017. SUBSET NO. 65. READINGS 76 77 78

QCSEE OTW ENGINE  
BELLMOUTH HARDWALL INLET  
TRT NAC, SPLITTER, TRT CORE  
ENGINE WITH T.O. FLAPS

*SPL* LOSSLESS ARRAY

*FLYOVER PLANE* DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERIC  
(FOR POWER AND DIRECTIVITY COMPUTATION)

*ENGINE CENTERLINE MICROPHONES*

ANGLE,  $\theta$ , 60. 90.

COMPUTED CASPL 112.5 118.7

BAND FREQUENCY

1	25	101.4	109.4
2	32	103.9	110.0
3	40	105.5	110.7
4	50	105.5	110.4
5	63	101.9	109.2
6	80	100.7	108.9
7	100	98.9	106.4
8	125	99.9	104.5
9	160	96.2	101.5
10	200	93.7	99.6
11	250	92.9	98.9
12	315	94.1	100.4
13	400	94.3	101.3
14	500	93.0	100.5
15	630	93.9	98.9
16	800	92.7	98.2
17	1000	91.6	96.8
18	1250	90.2	95.2
19	1600	89.4	93.4
20	2000	86.2	91.8
21	2500	84.7	91.0
22	3150	83.1	89.4
23	4000	80.4	85.9
24	5000	77.0	85.9
25	6300	75.7	85.4
26	8000	76.9	80.5
27	10000	73.6	82.1
28	12500	75.5	85.6
29	16000	80.6	90.6

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FOLDOUT FRAME /

CONFIGURATION NO 216  
SPEED = 3578. RPM  
PERCENT SPEED = 95.0

SSLESS ARRAY

RADIUS WITH NO ATMOSPHERIC ATTENUATION  
AND DIRECTIVITY COMPUTATIONS)

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FOLDOUT FRAME 2

DATA OF 1017. SUBSET NO. 65. READINGS 76 77 78

SIX DECIBELS HAVE BEEN SUBTRACTED FROM THE ORIGINAL DATA.  
QCSEE OTW ENGINE  
BELLMOUTH HARDWALL INLET  
TRT NAC, SPLITTER, TRT CORE  
ENGINE WITH T.O. FLAPS

ORIGINAL PAGE IS  
OF POOR QUALITY

SPL LOSSLESS ARRAY

FLYOVER PLANE

DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERIC  
(FOR POWER AND DIRECTIVITY COMPUTATION)

ANGLE,  $\theta$  0. 30. 40. 50. 60. 70. 80. 90. 100. 110. 120.

COMPUTED DASPL 108.2 109.8 111.6 110.7 112.1 111.5 111.9 113.7 115.9 116.2 118.2

BAND FREQUENCY

1	25	93.8	94.7	97.2	98.5	99.3	100.8	100.2	102.5	102.8	103.5	103.3
2	32	95.2	98.3	101.3	102.3	101.3	102.0	101.5	102.8	103.5	102.8	108.0
3	40	96.2	100.8	104.3	103.0	105.7	103.2	102.7	104.2	108.0	106.7	106.8
4	50	96.8	103.0	104.5	103.7	104.3	101.3	103.2	104.5	107.2	107.3	109.5
5	63	99.0	102.2	103.8	100.7	101.0	101.2	103.3	105.0	105.7	106.2	108.5
6	80	100.3	99.5	100.0	97.3	101.3	101.2	101.8	104.0	106.8	106.3	107.0
7	100	99.3	97.5	96.2	97.2	98.7	100.0	99.7	102.0	104.5	104.7	107.3
8	125	99.2	95.2	97.7	97.7	100.0	99.0	99.9	101.2	104.4	104.9	107.7
9	160	96.7	95.9	97.5	96.9	98.5	98.4	98.7	101.2	102.0	104.4	106.9
10	200	94.9	95.7	97.2	95.0	97.0	97.5	97.9	99.7	102.0	103.7	106.4
11	250	91.7	93.6	94.1	94.1	95.9	95.9	96.7	97.6	100.2	102.2	104.7
12	315	90.4	92.4	92.9	93.6	95.6	96.1	96.4	98.1	100.6	102.6	103.4
13	400	90.4	91.3	92.3	93.3	94.4	95.1	95.1	96.6	98.8	101.1	102.3
14	500	89.3	89.8	91.5	91.5	93.3	92.8	93.3	95.8	99.0	99.6	100.5
15	630	88.7	89.5	92.2	90.8	92.0	91.7	92.5	95.2	97.3	98.8	99.0
16	800	86.7	89.0	90.9	91.2	92.9	93.4	92.4	94.2	96.5	97.5	98.2
17	1000	85.6	87.1	89.4	89.3	91.1	91.3	90.8	92.9	95.8	96.6	96.3
18	1250	85.5	85.1	87.8	87.1	88.8	88.6	89.3	90.6	93.6	94.5	94.5
19	1600	88.7	89.0	88.0	86.5	88.0	87.2	87.9	90.4	93.2	93.2	92.5
20	2000	84.0	84.1	85.3	84.1	86.1	85.5	86.1	88.6	92.0	91.5	91.0
21	2500	82.1	81.0	83.1	82.3	84.1	83.8	84.0	87.1	90.8	90.1	89.8
22	3150	82.9	81.2	82.0	81.0	82.5	81.9	82.4	85.5	89.0	88.2	87.4
23	4000	80.6	78.9	80.3	79.3	80.6	80.4	80.8	83.9	87.9	85.9	85.3
24	5000	79.7	78.0	79.0	77.4	79.0	79.0	79.5	82.2	85.9	83.2	83.7
25	6300	77.8	75.6	77.6	75.8	77.3	76.9	77.3	80.1	84.1	80.6	82.3
26	8000	75.1	73.8	74.2	73.8	74.2	74.1	74.4	77.0	80.8	76.7	79.5
27	10000	76.1	76.1	76.1	76.1	76.1	76.1	76.1	76.0	78.5	76.0	78.4
28	12500	79.6	79.6	79.6	79.6	79.6	79.6	79.6	79.6	79.4	79.6	79.4
29	16000	84.6	84.6	84.6	84.6	84.6	84.6	84.6	84.6	84.6	84.6	84.6

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FOLDOUT FRAME

FROM THE ORIGINAL DATA.

CONFIGURATION NO 216  
SPEED = 3578. RPM.  
PERCENT SPEED = 95.0

S S L E S S A R R A Y

ORIGINAL PAGE IS  
OF POOR QUALITY

RADIUS WITH NO ATMOSPHERIC ATTENUATION  
AND DIRECTIVITY COMPUTATIONS)

0. 90. 100. 110. 120. 130. 180.

.9 113.7 115.9 116.2 118.2 117.6 124.9

.2 102.5 102.8 103.5 103.3 106.2 111.7

.5 102.8 103.5 102.8 108.0 107.7 112.9

.7 104.2 103.0 106.7 106.8 108.5 116.0

.2 104.5 107.2 107.3 109.5 109.8 117.3

.3 105.0 105.7 106.2 108.5 108.7 117.2

.8 104.0 106.8 106.3 107.0 108.7 115.8

.7 102.0 104.5 104.7 107.3 105.5 114.0

.9 101.2 104.4 104.9 107.7 105.2 112.5

.7 101.2 102.0 104.4 106.9 102.9 110.9

.9 99.7 102.0 103.7 106.4 102.7 110.4

.7 97.6 100.2 102.2 104.7 99.7 107.9

.4 98.1 100.6 102.6 103.4 100.7 107.1

.1 96.6 98.8 101.1 102.3 98.8 105.3

.3 95.8 99.0 99.6 100.5 97.0 102.8

.5 95.2 97.3 98.8 99.0 96.2 101.5

.4 94.2 96.5 97.5 98.2 95.9 100.5

.8 92.9 95.8 96.6 96.3 93.4 99.1

.3 90.6 93.6 94.5 94.5 91.5 98.3

.9 90.4 93.2 93.2 92.5 90.5 97.0

.1 88.6 92.0 91.5 91.0 88.8 96.1

.0 87.1 90.8 90.1 89.8 87.1 95.1

.4 85.5 89.0 88.2 87.4 85.2 93.9

.8 83.9 87.9 85.9 85.3 83.6 92.4

.5 82.2 85.9 83.2 83.7 82.0 91.2

.3 80.1 84.1 80.6 82.3 80.6 90.3

.4 77.0 80.8 76.7 79.5 77.8 87.9

.1 76.0 78.5 76.0 78.4 76.5 87.1

.6 79.6 79.4 79.6 79.4 79.5 89.5

.6 84.6 84.6 84.6 84.6 84.6 94.6

176

FOLDOUT FRAME

# *SPL* LOSSLESS DATA AT 100 FOOT RADIUS

QCSEE OTW ENGINE

SDOF INLET

FULLY SUPPRESSED ENGINE

ENGINE WITH T.O. FLAPS

READING NUMBERS = 79 80 81

CONFIGURATION NO = 214

SPEED = 1827. RPM

TEMPERATURE = 35.0 F

RELATIVE HUMIDITY = 67.0 PC

## *SIDELINE PLANE* BOOM MICROPHONES - LOSSLESS DATA

MIC # 14 15 16 17 18

R 0. 17. 31. 43. 54.

THETA,  $\theta_s$  90. 90. 90. 90. 90.

Z 106. 98. 91. 86. 91.

DISTANCE 91. 85. 82. 83. 86.

PHI,  $\phi$  0. 11. 22. 31. 39.

INDEX FREQ

1 25. 81.5 76.2 77.4 80.2 81.3

2 32. 80.0 77.5 79.9 84.5 84.2

3 40. 80.6 79.0 81.8 81.7 82.7

4 50. 81.6 82.7 83.3 88.2 88.2

5 63. 84.8 82.9 83.3 84.7 85.2

6 80. 83.1 78.9 80.3 81.5 82.7

7 100. 80.1 77.9 77.9 78.7 80.0

8 125. 79.5 78.2 80.3 80.2 81.7

9 160. 75.8 75.1 77.4 77.5 78.7

10 200. 78.2 77.2 79.1 78.9 79.3

11 250. 77.3 75.2 77.3 77.5 78.3

12 315. 76.0 72.7 74.8 75.4 76.3

13 400. 73.3 70.9 72.5 73.2 74.0

14 500. 72.5 69.6 71.6 72.1 72.5

15 630. 73.4 70.4 71.5 71.7 71.5

16 800. 78.7 75.6 75.8 76.1 75.9

17 1000. 75.8 72.7 72.9 72.9 73.3

18 1250. 74.3 71.5 71.1 70.8 71.0

19 1600. 71.7 69.3 69.6 70.2 70.4

20 2000. 69.5 66.7 67.1 68.4 68.0

21 2500. 68.5 66.4 66.4 66.7 67.4

22 3150. 67.9 65.5 65.0 66.1 66.2

23 4000. 69.2 65.8 64.6 66.2 67.1

24 5000. 71.7 68.0 65.4 67.2 67.7

25 6300. 76.2 73.1 69.7 71.4 71.4

26 8000. 74.8 73.0 68.5 72.4 73.5

27 10000. 74.7 71.4 64.6 69.4 69.6

28 12500. 79.1 73.2 62.8 67.4 67.1

29 16000. 71.8 66.3 58.2 61.8 61.6

OASPL 92.7 90.5 91.4 93.5 94.0

FOLDOUT FRAME

177

81

SPEED = 1827. RPM

PERCENT SPEED

48.3

FGK 4860

E HUMIDITY = 67.0 PC

BAROMETER = 29.36 IN HG

X1711 .290

OUT FRAME

1

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FOLDOUT FRAME

2 SS. 66





DATA OF 1024. SUBSET NO. 66. READINGS 79 80 81

QCSEE GTW ENGINE

SDOF INLET

FULLY SUPPRESSED ENGINE

ENGINE WITH T.O. FLAPS

SPL LOSSLESS ARRAY

FLYOVER PLANE DATA AT 100.0 FT RADIUS WITH NO ATMOSPHER  
(FOR POWER AND DIRECTIVITY COMPUTA

ENGINE CENTERLINE MICROPHONES

ANGLE,  $\theta$  60. 90.

COMPUTED DASPL 101.0 98.4

BAND FREQUENCY

1	25	94.0	91.7
2	32	93.7	91.9
3	40	92.5	88.0
4	50	91.0	90.0
5	63	88.5	89.0
6	80	85.5	85.9
7	100	84.2	84.2
8	125	82.7	82.4
9	160	79.4	78.7
10	200	79.2	77.7
11	250	76.9	77.9
12	315	77.6	78.1
13	400	76.6	75.7
14	500	73.9	74.9
15	630	73.6	74.0
16	800	83.3	79.2
17	1000	79.0	75.4
18	1250	78.0	72.3
19	1600	80.1	71.9
20	2000	77.1	69.5
21	2500	78.8	70.1
22	3150	78.0	68.5
23	4000	78.9	67.9
24	5000	78.1	70.5
25	6300	87.2	74.1
26	8000	90.2	73.0
27	10000	85.9	72.9
28	12500	79.5	67.3
29	16000	77.2	70.4

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FOLDOUT FRAME

CONFIGURATION NO 214  
SPEED = 1827. RPM  
PERCENT SPEED = 48.3

O S S L E S S   A R R A Y

T RADIUS WITH NO ATMOSPHERIC ATTENUATION  
ER AND DIRECTIVITY COMPUTATIONS)

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FOLDOUT FRAME

2

DATA OF 1024. SUBSET NO. 66. READINGS 79 80 81

SIX DECIBELS HAVE BEEN SUBTRACTED FROM THE ORIGINAL DATA.

QCSEE OTW ENGINE  
SDOF INLET  
FULLY SUPPRESSED ENGINE  
ENGINE WITH T.O. FLAPS

*SPL* LOSSLESS ARRAY

ORIGINAL PAGE IS  
OF POOR QUALITY.

*FLYOVER PLANE*

DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERIC  
(FOR POWER AND DIRECTIVITY COMPUTATION)

ANGLE  $\theta$  0. 30. 40. 50. 60. 70. 80. 90. 100. 110. 120.  
COMPUTED DASPL 101.3 98.1 98.5 97.9 96.4 95.1 93.7 93.5 95.0 94.9 94.

BAND FREQUENCY

1	25	78.0	84.3	85.5	85.0	86.3	86.0	86.2	84.8	87.0	86.0	83.
2	32	77.5	86.5	86.0	86.7	87.8	87.3	85.3	85.3	86.7	84.0	83.
3	40	80.5	83.8	86.7	86.0	85.5	84.7	83.7	84.2	83.0	85.0	84.
4	50	80.0	86.7	87.5	86.7	87.5	84.7	84.5	86.7	89.0	89.5	88.
5	63	83.3	85.5	86.3	85.5	84.7	83.8	85.5	84.7	87.0	85.8	85.
6	80	81.8	82.8	82.2	80.3	80.8	82.7	81.5	81.5	83.5	83.3	84.
7	100	81.8	80.8	77.3	78.7	79.5	80.8	78.0	79.3	80.3	81.0	80.
8	125	81.2	78.7	79.4	80.5	80.5	80.0	79.7	79.0	79.7	81.4	81.
9	160	79.7	77.5	78.7	78.7	77.9	77.5	77.0	77.4	77.2	78.7	79.
10	200	84.5	79.5	80.7	79.2	78.2	78.9	79.2	77.2	78.0	79.2	80.
11	250	80.5	77.0	76.0	76.0	76.0	75.9	76.0	75.7	76.0	77.4	78.
12	315	74.3	74.8	74.0	74.5	74.0	74.5	74.0	73.9	74.4	75.0	76.
13	400	72.8	72.3	72.1	72.9	73.4	72.7	71.2	71.4	71.7	73.7	75.
14	500	71.1	71.8	71.6	71.4	70.9	70.2	69.9	69.7	71.1	72.7	74.
15	630	74.4	73.1	72.3	71.9	71.1	70.8	69.6	68.8	69.6	71.6	72.
16	800	85.1	82.8	82.8	81.5	78.6	77.1	76.3	73.3	73.1	74.1	77.
17	1000	83.4	80.0	78.9	77.4	75.9	73.9	71.9	69.7	69.7	71.2	74.
18	1250	84.4	80.1	80.6	77.4	74.6	72.3	68.9	68.3	68.4	70.3	72.
19	1600	86.1	83.4	83.2	80.6	77.4	74.9	70.7	68.6	67.9	69.2	70.
20	2000	83.6	80.3	80.5	78.3	74.6	71.6	67.4	66.1	65.8	67.3	68.
21	2500	82.6	82.5	82.5	79.6	76.8	73.0	66.8	65.8	65.5	66.4	66.
22	3150	82.3	81.4	81.6	79.1	76.1	72.5	66.0	64.4	64.8	65.3	65.
23	4000	84.2	81.7	81.2	80.5	77.4	73.5	66.7	64.5	63.5	64.7	65.
24	5000	83.0	82.2	82.8	80.9	78.2	74.2	66.9	65.5	64.5	65.0	67.
25	6300	97.5	89.4	91.6	89.4	83.9	81.9	73.7	68.5	67.5	68.8	70.
26	8000	95.2	91.6	89.5	90.3	87.0	83.9	74.8	69.3	67.1	66.4	68.
27	10000	84.6	83.8	86.1	88.3	83.8	82.3	71.4	66.0	63.5	63.1	66.
28	12500	83.9	78.2	79.7	79.5	77.6	74.6	65.1	61.3	61.6	63.8	67.
29	16000	85.1	78.2	81.0	78.6	74.8	72.2	64.1	64.4	64.4	64.2	64.

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FOLDOUT FRAME |

D FROM THE ORIGINAL DATA.

CONFIGURATION NO 214

SPEED = 1827. RPM

PERCENT SPEED = 48.3

## LOSSLESS ARRAY

FT RADIUS WITH NO ATMOSPHERIC ATTENUATION  
WER AND DIRECTIVITY COMPUTATIONS)ORIGINAL PAGE IS  
OF POOR QUALITY

80.	90.	100.	110.	120.	130.	180.
93.7	93.5	95.0	94.9	94.5	94.7	95.6
86.2	84.8	87.0	86.0	83.2	84.8	98.0
85.3	85.3	86.7	84.0	83.7	85.8	85.3
83.7	84.2	83.0	85.0	84.5	84.2	84.0
84.5	86.7	89.0	89.5	88.0	86.8	86.5
85.5	84.7	87.0	85.8	85.7	86.2	88.2
81.5	81.5	83.5	83.3	84.2	82.5	86.0
78.0	79.3	80.3	81.0	80.3	79.8	83.2
79.7	79.0	79.7	81.4	81.9	82.2	81.5
77.0	77.4	77.2	78.7	79.7	80.2	80.2
79.2	77.2	78.0	79.2	80.4	82.2	81.2
76.0	75.7	76.0	77.4	78.7	79.4	78.7
74.0	73.9	74.4	75.0	76.0	76.9	76.7
71.2	71.4	71.7	73.7	75.4	75.6	74.2
69.9	69.7	71.1	72.7	74.1	74.1	72.4
69.6	68.8	69.6	71.6	72.9	72.3	71.8
76.3	73.3	73.1	74.1	77.3	76.0	75.1
71.9	69.7	69.7	71.2	74.0	73.9	73.0
68.9	68.3	68.4	70.3	72.1	72.9	70.9
70.7	68.6	67.9	69.2	70.4	70.4	69.6
67.4	66.1	65.8	67.3	68.1	67.1	67.6
66.8	65.8	65.5	66.4	66.9	66.3	67.1
66.0	64.4	64.8	65.3	65.6	65.6	65.9
66.7	64.5	63.5	64.7	65.4	66.1	66.6
66.9	65.5	64.5	65.0	67.2	68.5	68.2
73.7	68.5	67.5	68.8	70.4	71.8	73.1
74.8	69.3	67.1	66.4	68.9	69.5	71.1
71.4	66.0	63.5	63.1	66.0	66.1	70.6
65.1	61.3	61.6	63.8	67.5	67.2	73.6
64.1	64.4	64.4	64.2	64.0	64.0	69.6

179

# *SPL* LOSSLESS DATA AT 100 FOOT RADIUS

QCSEE OTW ENGINE

SDOF INLET

ORIGINAL PAGE IS  
OF POOR QUALITY

FULLY SUPPRESSED ENGINE

ENGINE WITH T.O. FLAPS

READING NUMBERS = 82 83 84

CONFIGURATION NO = 214

SPEED = 2422. RPM

TEMPERATURE = 46.0 F

RELATIVE HUMIDITY = 65.0 PC

## *SIDELINE PLANE* ROOM MICROPHONES - LOSSLESS DATA

MIC #	14	15	16	17	18
R	0.	17.	31.	43.	54.
THETA, $\theta_s$	90.	90.	90.	90.	90.
Z	106.	98.	91.	86.	81.
DISTANCE	91.	85.	82.	83.	86.
PHI, $\phi$	0.	11.	22.	31.	39.

INDEX FREQ

1	25.	87.6	82.7	84.9	86.2	91.8
2	32.	85.5	84.4	88.6	89.8	93.8
3	40.	84.8	84.5	89.1	91.2	95.3
4	50.	86.8	87.7	93.1	94.3	97.8
5	63.	87.3	85.5	86.6	89.5	93.8
6	80.	88.1	87.4	89.6	89.4	91.8
7	100.	84.8	84.6	85.4	87.4	89.0
8	125.	86.3	84.2	86.9	88.2	89.7
9	160.	83.5	82.7	84.8	86.2	88.7
10	200.	85.2	83.2	85.9	87.2	89.2
11	250.	85.0	83.4	85.1	86.4	87.3
12	315.	82.2	80.6	83.1	84.2	86.2
13	400.	81.2	79.1	81.6	82.6	84.0
14	500.	80.0	78.3	80.5	81.7	82.9
15	630.	79.9	76.9	79.1	79.7	80.9
16	800.	80.7	77.5	79.0	79.4	80.4
17	1000.	80.6	77.5	79.0	79.4	80.4
18	1250.	82.6	78.8	80.5	80.5	81.3
19	1600.	76.7	73.9	75.6	76.0	76.0
20	2000.	76.4	73.5	74.7	75.4	75.9
21	2500.	76.7	74.1	74.8	75.6	76.7
22	3150.	76.6	73.2	73.2	74.8	75.1
23	4000.	77.3	73.0	72.6	74.2	74.8
24	5000.	77.0	72.1	71.6	73.1	73.8
25	6300.	78.3	74.7	72.0	74.6	74.5
26	8000.	79.4	75.0	71.4	74.4	75.3
27	10000.	80.4	77.0	71.3	76.5	76.1
28	12500.	80.8	76.3	69.1	75.3	75.1
29	16000.	79.1	73.1	63.7	70.1	70.4

OASPL 97.9 96.2 99.1 100.4 103.6

FOLDOUT FRAME 1

180

ORIGINAL PAGE IS  
OF POOR QUALITY

84

SPEED = 2422. RPM

PERCENT SPEED 65.0

FGK 8890

IVE HUMIDITY = 65.0 PC

BAROMETER = 29.34 IN HG

XM. .415

OUT FRAME 1

180

FOLDOUT FRAME 2

SS. 67

DATA OF 1024. SUBSET NO. 67. READINGS 82 83 84

QCSEE CTW ENGINE  
SDOF INLET  
FULLY SUPPRESSED ENGINE  
ENGINE WITH T.O. FLAPS

*S'PL* LOSSLESS ARRAY

*FLYOVER PLANE* DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERIC  
(FOR POWER AND DIRECTIVITY COMPUTATION)

*ENGINE CENTERLINE MICROPHONES*

ANGLE,  $\theta$ , 60. 90.

COMPUTED CASPL 106.4 106.9

BAND FREQUENCY

1	25	96.8	99.9
2	32	99.7	98.9
3	40	99.0	96.7
4	50	97.2	99.2
5	63	93.4	97.0
6	80	91.9	96.7
7	100	92.0	94.4
8	125	91.5	91.9
9	160	87.0	88.9
10	200	85.9	87.1
11	250	85.6	87.4
12	315	85.4	87.7
13	400	84.9	86.4
14	500	82.4	85.3
15	630	80.6	84.1
16	800	82.3	83.3
17	1000	84.7	82.4
18	1250	90.1	82.8
19	1600	82.7	78.2
20	2000	84.0	78.0
21	2500	87.7	79.4
22	3150	85.9	77.1
23	4000	85.0	76.3
24	5000	83.2	77.1
25	6300	87.9	78.3
26	8000	89.2	75.5
27	10000	89.8	80.1
28	12500	90.3	78.8
29	16000	85.4	82.0

181

FOLDOUT FRAME I

CONFIGURATION NO 214  
SPEED = 2422. RPM  
PERCENT SPEED = 65.0

LOSSLESS ARRAY

FT RADIUS WITH NO ATMOSPHERIC ATTENUATION  
(POWER AND DIRECTIVITY COMPUTATIONS)

181

FOLDOUT FRAME 2



DATA OF 1024. SUBSET NO. 67. READINGS 82 83 84

SIX DECIBELS HAVE BEEN SUBTRACTED FROM THE ORIGINAL DATA.

QCSEE OTW ENGINE

SDOF INLET

FULLY SUPPRESSED ENGINE

ENGINE WITH T.O. FLAPS

ORIGINAL PAGE IS  
OF POOR QUALITY

*SPL* LOSSLESS ARRAY

*FLYOVER PLANE* DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERIC  
(FOR POWER AND DIRECTIVITY COMPUTATION)

ANGLE,  $\theta$ , 0. 30. 40. 50. 60. 70. 80. 90. 100. 110. 120.

COMPUTED OASPL 102.3 103.4 103.4 102.9 102.9 102.7 101.4 101.9 102.8 103.3 104.0

BAND FREQUENCY

1	25	85.0	89.8	91.5	93.7	92.8	94.5	94.3	93.8	95.7	95.0	95.3
2	32	85.5	93.2	94.5	94.0	95.5	95.8	94.3	94.5	93.5	92.3	94.3
3	40	87.0	93.3	92.5	94.3	94.7	94.8	91.3	91.3	93.8	95.5	94.3
4	50	87.7	94.2	95.5	93.2	93.7	92.5	91.8	93.3	95.2	95.2	95.5
5	63	89.2	92.0	91.5	90.3	89.7	90.5	90.7	92.8	92.5	92.7	94.3
6	80	88.2	89.8	89.3	87.7	89.0	89.8	89.7	90.3	91.3	92.0	92.7
7	100	88.3	86.3	85.5	86.7	89.3	88.8	87.7	89.0	88.8	90.3	90.2
8	125	87.4	83.9	86.5	88.4	88.7	88.2	87.7	87.5	90.2	90.5	92.0
9	160	85.4	84.0	86.4	86.7	86.5	86.0	85.9	86.2	87.5	89.5	90.2
10	200	85.7	85.4	86.7	86.0	85.7	86.7	86.0	86.7	87.4	88.5	90.2
11	250	82.4	83.9	82.9	83.4	84.7	85.4	85.0	85.0	85.4	87.7	89.0
12	315	79.9	81.4	80.1	82.4	83.2	84.6	83.9	84.6	84.6	86.2	87.7
13	400	77.6	78.7	79.6	81.4	82.9	82.9	81.1	82.1	82.6	84.7	86.7
14	500	74.8	77.6	77.8	79.3	79.3	79.8	79.9	80.3	81.6	84.1	85.4
15	630	75.1	76.3	76.9	77.3	78.1	78.1	78.6	78.9	80.3	82.4	84.1
16	800	79.3	78.6	78.8	78.6	79.6	78.8	78.3	77.8	79.5	82.1	83.3
17	1000	87.5	85.7	83.3	83.0	81.0	79.0	77.2	77.2	78.3	80.8	82.2
18	1250	93.9	91.7	89.1	89.2	95.1	82.2	77.4	77.6	78.1	80.9	82.6
19	1600	87.0	86.3	84.5	82.0	80.0	77.0	74.2	74.0	75.0	77.5	78.0
20	2000	87.5	87.0	85.2	83.2	81.2	77.3	74.2	73.5	74.8	76.5	76.6
21	2500	89.4	89.6	87.2	86.2	83.7	79.7	76.1	73.9	75.0	76.0	75.9
22	3150	87.4	87.9	86.1	83.9	83.2	79.4	74.4	72.7	73.1	74.1	74.4
23	4000	88.1	87.3	86.9	84.1	82.8	79.6	74.5	72.1	72.5	73.0	73.1
24	5000	87.4	87.4	86.3	83.7	82.7	78.9	73.4	71.2	70.6	71.3	72.5
25	6300	89.6	88.7	87.9	85.7	85.0	81.3	75.8	71.8	70.6	70.6	72.1
26	8000	92.7	90.9	90.2	87.4	85.4	81.7	76.2	72.2	69.5	68.6	71.1
27	10000	89.5	90.7	91.5	90.0	89.2	84.8	78.7	74.5	70.3	68.5	71.4
28	12500	86.7	89.0	89.3	88.5	87.8	84.0	79.5	74.4	71.5	71.6	71.6
29	16000	85.7	85.5	86.6	84.6	82.3	80.1	75.2	75.8	76.2	76.2	76.2

182

FOLDOUT FRAME /

FROM THE ORIGINAL DATA.

CONFIGURATION NO 214

SPEED = 2422. RPM

PERCENT SPEED = 65.0

D S S L E S S A R R A Y

ORIGINAL PAGE 12  
OF POOR QUALITYRADIUS WITH NO ATMOSPHERIC ATTENUATION  
(AND DIRECTIVITY COMPUTATIONS)

80. 90. 100. 110. 120. 130. 180.

1.4 101.9 102.8 103.3 104.0 103.4 106.2

4.3	93.8	95.7	95.0	95.3	94.3	94.3
4.3	94.5	93.5	92.3	94.3	93.5	98.5
1.3	91.3	93.8	95.5	94.3	93.3	98.2
1.8	93.3	95.2	95.2	95.5	94.5	97.7
0.7	92.8	92.5	92.7	94.3	92.8	97.3
0.7	90.3	91.3	92.0	92.7	92.8	96.2
7.7	89.0	88.8	90.3	90.2	91.2	93.8
7.7	87.5	90.2	90.5	92.0	92.0	92.4
5.9	86.2	87.5	89.5	90.2	90.2	90.5
5.0	86.7	87.4	88.5	90.2	91.4	91.4
5.0	85.0	85.4	87.7	89.0	88.4	88.9
3.9	84.6	84.6	86.2	87.7	87.6	86.9
1.1	82.1	82.6	84.7	86.7	85.7	85.2
0.9	80.3	81.6	84.1	85.4	83.8	83.3
3.6	78.9	80.3	82.4	84.1	81.6	81.8
3.3	77.8	79.5	82.1	83.3	82.1	82.0
7.2	77.2	78.3	80.8	82.2	80.7	81.5
7.4	77.6	78.1	80.9	82.6	80.9	82.1
4.2	74.0	75.0	77.5	78.0	76.0	78.2
4.2	73.5	74.8	76.5	76.6	75.0	77.0
5.1	73.9	75.0	76.0	75.9	74.2	76.2
4.4	72.7	73.1	74.1	74.4	73.1	75.4
4.5	72.1	72.5	73.0	73.1	73.0	74.6
1.4	71.2	70.6	71.3	72.5	72.3	74.2
5.8	71.8	70.6	70.6	72.1	72.4	74.8
5.2	72.2	69.5	68.6	71.1	71.4	74.5
1.7	74.5	70.3	68.5	71.4	70.4	75.6
0.5	74.4	71.5	71.6	71.6	71.4	73.7
5.2	75.8	76.2	76.2	76.2	76.2	75.9

182

FOLDOUT FRAME 2

# *SPL* LOSSLESS DATA AT 100 FOOT RADIUS

QCSEE QTH ENGINE

SDDF INLET

FULLY SUPPRESSED ENGINE

ENGINE WITH T.O. FLAPS

READING NUMBERS = 88 89 90

CONFIGURATION NO = 214 SPEED = 3048. RPM

TEMPERATURE = 48.0 F RELATIVE HUMIDITY = 58.0 PC

## *SIDELINE PLANE* BOOM MICROPHONES - LOSSLESS DATA

MIC # 14 15 16 17 18

R 0. 17. 31. 43. 54.

THETA,  $\theta_s$  90. 90. 90. 90. 90.

Z 106. 98. 91. 86. 81.

DISTANCE 91. 85. 82. 83. 86.

PHI,  $\phi$  0. 11. 22. 31. 39.

INDEX FREQ

1	25.	91.6	86.7	91.8	91.0	91.7
2	32.	91.0	87.5	91.9	95.3	95.8
3	40.	91.1	89.4	93.4	94.7	96.8
4	50.	93.0	91.9	96.3	98.0	99.7
5	63.	93.5	90.4	93.1	94.0	95.3
6	80.	93.3	91.6	92.8	95.4	95.3
7	100.	93.0	89.6	91.1	93.2	94.2
8	125.	94.0	90.4	93.9	94.5	95.3
9	160.	91.0	88.9	91.6	93.0	93.7
10	200.	91.7	88.4	91.4	92.7	93.0
11	250.	90.5	87.4	90.9	91.5	92.3
12	315.	88.3	85.9	89.5	91.2	91.2
13	400.	88.9	85.6	88.6	89.4	89.5
14	500.	87.5	85.1	87.8	89.2	89.2
15	630.	86.2	83.3	86.3	87.7	87.7
16	800.	86.9	83.6	86.8	86.8	87.7
17	1000.	85.1	82.5	85.2	85.9	86.4
18	1250.	86.0	81.9	84.2	85.3	85.6
19	1600.	87.2	81.7	83.1	84.9	84.7
20	2000.	81.9	79.2	81.0	82.1	82.6
21	2500.	82.1	79.3	81.2	82.1	82.8
22	3150.	83.8	80.9	82.0	82.8	84.1
23	4000.	83.9	80.4	81.0	82.1	82.8
24	5000.	82.6	79.1	78.9	80.3	81.0
25	6300.	83.4	80.7	78.8	81.4	81.8
26	8000.	82.4	79.2	76.4	80.1	80.7
27	10000.	82.8	78.6	73.2	78.1	78.4
28	12500.	82.8	78.1	71.4	76.6	77.5
29	16000.	82.8	77.2	69.9	76.0	76.9

FOLDOUT FRAME 1

NASPL

103.9 101.1 104.1 105.6 106.5

SPEED = 3048. RPM

PERCENT SPEED 81.0

FGK 14129

HUMIDITY = 58.0 PC

BAROMETER = 29.30 IN HG

XMH 569

S.S. 68

FRAME 1

183

FOLDOUT FRAME 2

17C92

DATA OF 1024. SUBSET NO. 68. READINGS 88 89 90

QCSEE OTW ENGINE  
SDOF INLET  
FULLY SUPPRESSED ENGINE  
ENGINE WITH T.O. FLAPS

*SPL* LOSSLESS ARRAY

*FLYOVER PLANE* DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERIC  
(FOR POWER AND DIRECTIVITY COMPUTATION)

*ENGINE CENTERLINE MICROPHONES*

ANGLE,  $\theta$  60. 90.

COMPUTED OASPL 111.6 113.2

BAND FREQUENCY

1	25	101.7	103.5
2	32	104.5	105.0
3	40	105.2	105.2
4	50	103.0	104.7
5	63	99.4	105.4
6	80	99.0	102.2
7	100	97.5	100.5
8	125	97.2	99.2
9	160	94.2	95.9
10	200	92.7	93.6
11	250	91.4	93.7
12	315	91.6	94.4
13	400	91.4	93.4
14	500	89.6	92.6
15	630	88.0	91.8
16	800	89.2	91.2
17	1000	87.2	89.9
18	1250	88.1	87.8
19	1600	89.0	87.4
20	2000	86.2	85.2
21	2500	89.5	86.1
22	3150	92.8	86.8
23	4000	89.9	85.3
24	5000	87.7	85.4
25	6300	91.6	86.6
26	8000	91.5	82.0
27	10000	85.8	83.1
28	12500	87.1	80.6
29	16000	86.4	82.3

184

FOLDOUT FRAME

CONFIGURATION NO 214  
SPEED = 3048. RPM  
PERCENT SPEED. = 81.0

LOSSLESS ARRAY

FT RADIUS WITH NO ATMOSPHERIC ATTENUATION  
POWER AND DIRECTIVITY COMPUTATIONS)

55

184

FOLDOUT FRAME

2

DATA OF 1024. SUBSET NO. 68. READINGS 88 89 90

SIX DECIBELS HAVE BEEN SUBTRACTED FROM THE ORIGINAL DATA.  
 QCSEE OTW ENGINE  
 SDOF INLET  
 FULLY SUPPRESSED ENGINE  
 ENGINE WITH T.O. FLAPS

ORIGINAL PAGE IS  
 OF POOR QUALITY

*SPL* LOSSLESS ARRAY

*FLYOVER PLANE* DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERIC  
 (FOR POWER AND DIRECTIVITY COMPUTATION)

ANGLE  $\theta$  0. 30. 40. 50. 60. 70. 80. 90. 100. 110. 120.  
 COMPUTED DASPL 105.0 106.4 107.5 107.3 107.9 107.3 107.5 107.7 109.4 113.0 111.0

BAND FREQUENCY

1	25	88.7	93.5	95.8	96.3	99.3	96.3	98.8	98.2	101.2	103.3	97.0
2	32	89.2	96.7	99.0	99.3	100.3	99.2	100.2	98.3	101.3	108.0	101.0
3	40	90.5	99.7	98.7	99.3	100.0	99.3	98.8	98.5	100.0	103.7	102.0
4	50	94.0	98.8	100.8	99.8	98.7	98.3	98.5	100.0	101.2	103.8	103.0
5	63	94.0	96.5	98.2	96.7	94.8	95.7	97.5	98.3	99.2	101.0	101.0
6	80	93.5	95.0	93.7	91.7	95.8	96.3	95.3	97.0	98.2	101.2	100.0
7	100	93.3	92.2	90.8	92.3	93.3	95.0	94.8	95.8	96.0	98.8	98.0
8	125	93.2	89.9	92.4	93.4	94.9	93.9	94.5	94.4	96.7	99.0	100.0
9	160	90.0	89.9	92.4	92.2	92.7	92.9	91.9	93.5	94.0	97.5	98.0
10	200	88.5	90.7	90.4	90.4	91.7	93.4	91.9	92.7	94.2	96.7	98.0
11	250	86.2	88.0	88.0	88.2	89.7	90.4	91.0	90.9	92.4	95.9	96.0
12	315	82.9	86.6	85.9	87.9	88.1	89.7	90.1	90.7	91.4	94.6	96.0
13	400	81.7	84.1	86.1	86.4	88.4	88.6	87.2	88.2	89.6	93.7	96.0
14	500	80.8	82.9	84.4	84.9	85.4	86.6	86.1	86.9	89.1	92.8	94.0
15	630	79.4	81.4	83.6	83.1	83.8	85.4	85.1	86.1	87.9	91.4	92.0
16	800	82.1	81.6	83.6	83.8	85.5	86.6	85.0	85.8	87.1	90.5	91.0
17	1000	84.4	81.7	82.7	83.0	84.0	84.5	83.0	84.7	86.5	89.3	89.0
18	1250	90.1	85.6	84.9	84.4	85.1	83.9	81.7	82.9	84.9	87.9	88.0
19	1600	95.0	89.3	88.5	87.0	88.0	85.2	81.2	83.2	84.0	86.7	87.0
20	2000	87.2	85.2	85.7	84.7	83.8	82.0	79.8	81.0	83.0	85.2	85.0
21	2500	90.6	87.3	88.5	88.0	87.3	85.1	80.8	81.1	82.1	84.1	83.0
22	3150	93.8	90.2	92.8	91.3	89.8	88.2	83.3	82.7	81.8	83.8	82.0
23	4000	92.7	88.2	89.2	89.6	89.4	86.9	82.7	81.4	80.4	81.2	81.0
24	5000	90.8	86.5	88.3	87.8	87.6	85.0	80.6	79.6	78.6	79.3	80.0
25	6300	90.1	86.8	88.0	88.1	88.8	86.7	81.7	80.7	78.3	77.9	79.0
26	8000	88.2	84.3	87.1	86.4	87.5	85.5	79.5	79.3	76.3	75.4	76.0
27	10000	87.2	82.7	85.9	85.1	86.4	83.4	77.5	76.8	74.7	78.4	78.0
28	12500	84.9	80.9	84.8	85.9	85.4	83.1	76.3	76.4	73.2	82.1	82.0
29	16000	84.8	80.4	84.4	84.1	84.2	83.0	77.4	78.0	76.5	86.7	86.0

185

FOLDOUT FRAME 1

FROM THE ORIGINAL DATA.

CONFIGURATION NO 214  
SPEED = 3048. RPM  
PERCENT SPEED = 81.0

S S L E S S A R R A Y

ORIGINAL PAGE IS  
OF POOR QUALITY

RADIUS WITH NO ATMOSPHERIC ATTENUATION  
AND DIRECTIVITY COMPUTATIONS)

0.	90.	100.	110.	120.	130.	180.
.5	107.7	109.4	113.0	111.4	111.4	114.6
.8	98.2	101.2	103.3	97.7	101.7	99.7
.2	98.3	101.3	108.0	101.5	102.2	102.2
.8	98.5	100.0	103.7	102.5	102.8	107.2
.5	100.0	101.2	103.8	103.2	103.5	107.7
.5	98.3	99.2	101.0	101.5	101.3	106.5
.3	97.0	98.2	101.2	100.2	100.0	104.7
.8	95.8	96.0	98.8	98.7	98.3	102.8
.5	94.4	96.7	99.0	100.2	99.7	102.5
.9	93.5	94.0	97.5	98.7	97.5	100.9
.9	92.7	94.2	96.7	98.9	98.0	100.4
.0	90.9	92.4	95.9	96.9	95.0	97.4
.1	90.7	91.4	94.6	96.4	94.1	95.7
.2	88.2	89.6	93.7	96.2	92.7	93.6
.1	86.9	89.1	92.8	94.3	90.6	91.9
.1	86.1	87.9	91.4	92.8	88.9	90.6
.0	85.8	87.1	90.5	91.6	89.1	90.1
.0	84.7	86.5	89.3	89.7	86.8	89.0
.7	82.9	84.9	87.9	88.2	85.2	88.2
.2	83.2	84.0	86.7	87.2	85.0	87.0
.8	81.0	83.0	85.2	85.2	82.3	85.7
.8	81.1	82.1	84.1	83.6	81.4	84.6
.3	82.7	81.8	83.8	82.8	81.1	83.6
.7	81.4	80.4	81.2	81.1	80.4	82.9
.6	79.6	78.6	79.3	80.0	79.1	81.8
.7	80.7	78.3	77.9	79.4	78.8	81.3
.5	79.3	76.3	75.4	76.9	76.4	79.4
.5	76.8	74.7	78.4	78.3	78.3	79.5
.3	76.4	73.2	82.1	82.1	82.1	82.0
.4	78.0	76.5	86.7	86.7	86.7	86.7

185



# SPL LOSSLESS DATA AT 100 FOOT RADIUS

QCSEE OTW ENGINE

SDOF INLET

ORIGINAL PAGE IS  
OF POOR QUALITY

FULLY SUPPRESSED ENGINE

ENGINE WITH T.O. FLAPS

READING NUMBERS = 91 92 93

CONFIGURATION NO = 214

SPEED = 3237. RPM

TEMPERATURE = 50.0 F

RELATIVE HUMIDITY = 57.0 PC

## SIDELINE PLANE

ROOM MICROPHONES - LOSSLESS DATA

MIC #	14	15	16	17	18
R	0.	17.	31.	43.	54.
THETA, $\theta_s$	90.	90.	90.	90.	90.
Z	106.	98.	91.	86.	81.
DISTANCE	91.	85.	82.	83.	86.
PHI, $\phi$	0.	11.	22.	31.	39.

INDEX FREQ

1	25.	90.3	90.0	90.8	92.3	93.7
2	32.	90.5	89.0	95.8	95.3	97.5
3	40.	91.6	92.0	94.4	96.5	98.3
4	50.	93.1	93.0	98.9	99.0	100.3
5	63.	93.5	92.9	95.9	96.2	98.0
6	80.	94.1	92.9	96.1	96.9	97.5
7	100.	93.0	90.6	93.9	95.2	96.2
8	125.	94.7	92.2	96.6	95.9	97.7
9	160.	92.3	90.4	93.1	94.9	95.7
10	200.	93.7	90.7	92.6	94.2	96.0
11	250.	92.7	89.7	92.4	93.5	93.8
12	315.	90.8	88.1	91.5	93.0	93.2
13	400.	90.5	87.8	90.6	91.6	92.9
14	500.	89.9	87.1	89.8	90.7	91.9
15	630.	88.5	85.9	88.8	89.2	90.1
16	800.	89.1	86.3	88.8	88.9	89.7
17	1000.	88.1	84.8	89.0	88.4	89.1
18	1250.	87.6	83.7	86.7	87.6	87.8
19	1600.	88.7	84.7	86.9	87.5	87.7
20	2000.	84.3	81.7	83.5	84.4	85.3
21	2500.	84.6	81.0	83.2	84.1	84.7
22	3150.	86.8	83.5	84.4	85.6	87.0
23	4000.	85.3	80.8	82.0	83.4	84.8
24	5000.	85.0	81.3	81.5	83.6	84.5
25	6300.	85.1	82.2	80.8	83.5	84.0
26	8000.	83.6	80.5	78.2	81.8	82.9
27	10000.	84.0	79.7	75.3	80.0	81.1
28	12500.	84.0	78.9	72.1	77.3	78.9
29	16000.	84.0	78.2	70.4	77.0	77.9

FOLDOUT FRAME

ORIGINAL PAGE IS  
OF POOR QUALITY

93

SPEED = 3237. RPM

PERCENT SPEED 86.0

FEK 16500

HUMIDITY = 57.0 PC

BAROMETER = 29.27 IN HG XM.11 .643

S.S. 69

FRAME

186

FOLDOUT FRAME

2

DATA OF 1024. SUBSET NO. 69. READINGS 91 92 93

QCSEE OTW ENGINE  
SDOF INLET  
FULLY SUPPRESSED ENGINE  
ENGINE WITH T.O. FLAPS

*SPL* LOSSLESS ARRAY

*FLYOVER PLANE* DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERIC  
(FOR POWER AND DIRECTIVITY COMPUTATION)

*ENGINE CENTERLINE MICROPHONES*

ANGLE,  $\theta$ , 60. 90.

COMPUTED OASPL 112.8 117.6

BAND FREQUENCY

1	25	102.0	110.2
2	32	104.0	109.4
3	40	106.7	109.0
4	50	104.4	110.7
5	63	101.7	107.0
6	80	101.4	106.2
7	100	99.2	103.9
8	125	99.7	103.0
9	160	95.7	100.7
10	200	94.4	97.1
11	250	92.7	96.4
12	315	92.9	96.2
13	400	93.1	96.1
14	500	91.8	95.6
15	630	90.3	94.8
16	800	91.2	94.2
17	1000	89.7	92.5
18	1250	89.1	90.8
19	1600	92.7	89.9
20	2000	87.3	87.7
21	2500	89.4	87.8
22	3150	93.5	88.8
23	4000	88.2	85.5
24	5000	89.0	87.6
25	6300	91.3	87.6
26	8000	90.1	82.8
27	10000	84.8	84.6
28	12500	85.6	87.9
29	16000	84.6	92.8

187

FOLDOUT FRAME

1

CONFIGURATION NO 214  
SPEED = 3237. RPM  
PERCENT SPEED = 86.0

LOSSLESS ARRAY

ET RADIUS WITH NO ATMOSPHERIC ATTENUATION  
WER AND DIRECTIVITY COMPUTATIONS)

187

FOLDOUT FRAME

2

16966

DATA OF 1024. SUBSET NO. 69. READINGS 91 92 93

SIX DECIBELS HAVE BEEN SUBTRACTED FROM THE ORIGINAL DATA.  
 QCSEE OTW ENGINE  
 SDOF INLET  
 FULLY SUPPRESSED ENGINE  
 ENGINE WITH T.O. FLAPS

ORIGINAL PAGE IS  
 OF POOR QUALITY

SPL LOSSLESS ARRAY

FLYOVER PLANE DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERIC  
 (FOR POWER AND DIRECTIVITY COMPUTATION)

ANGLE,  $\theta$  0. 30. 40. 50. 60. 70. 80. 90. 100. 110. 120.

COMPUTED OASPL 105.2 107.8 109.1 108.3 109.4 108.8 111.2 109.8 111.7 112.1 114.1

BAND FREQUENCY

1	25	90.5	92.2	97.7	93.7	99.8	98.2	102.5	99.5	102.0	99.3	99.8
2	32	88.5	94.8	99.8	99.5	101.7	101.3	101.8	99.5	101.5	99.8	102.7
3	40	91.7	99.2	102.3	102.0	103.3	100.5	103.3	100.2	101.7	103.5	106.7
4	50	95.8	101.5	100.5	99.7	99.7	98.0	103.3	101.8	104.7	103.0	104.3
5	63	95.2	99.7	101.0	98.3	97.2	97.5	100.7	101.3	102.5	102.8	104.2
6	80	95.8	97.0	96.3	94.3	95.7	98.8	101.3	99.2	101.7	101.7	103.7
7	100	95.7	94.7	92.7	93.3	94.8	96.7	98.3	97.7	99.3	100.5	101.5
8	125	94.0	91.9	94.2	95.4	96.0	96.0	96.9	98.0	98.5	100.0	103.0
9	160	92.9	91.0	94.5	93.9	93.9	94.7	96.2	96.0	96.4	99.2	101.4
10	200	91.4	92.5	93.2	92.9	93.0	94.5	96.0	95.0	97.0	99.2	101.9
11	250	87.4	90.2	90.2	90.0	92.2	92.5	93.7	93.7	95.2	98.0	99.9
12	315	85.2	88.1	88.7	89.4	91.1	92.1	93.4	93.2	94.6	97.1	99.1
13	400	84.6	86.2	87.9	88.9	90.6	90.6	90.7	90.6	92.7	96.1	98.4
14	500	83.6	84.6	86.8	87.6	87.4	88.6	89.9	89.9	91.6	95.4	96.4
15	630	81.4	83.4	85.8	86.3	85.9	87.3	88.4	88.9	90.8	93.9	95.3
16	800	81.3	83.1	86.1	86.5	87.0	88.1	88.3	88.1	90.1	93.1	94.1
17	1000	81.0	83.0	85.0	85.7	86.0	86.2	86.5	87.0	88.7	91.8	92.8
18	1250	85.8	85.3	85.9	85.1	84.6	84.7	84.9	84.9	87.4	89.7	91.1
19	1600	92.7	91.8	92.3	89.7	86.7	88.2	85.0	86.8	87.2	89.0	89.7
20	2000	85.7	83.7	85.3	84.7	84.2	83.2	82.5	83.2	85.2	86.8	88.0
21	2500	89.8	87.3	87.6	88.1	86.8	84.4	83.3	82.6	84.2	85.7	86.6
22	3150	92.3	91.1	92.1	91.9	91.6	89.1	86.4	85.1	84.1	84.8	85.9
23	4000	87.2	87.4	86.5	87.7	86.5	84.8	82.2	81.0	82.0	82.8	83.5
24	5000	88.9	89.8	87.9	89.2	88.7	86.4	82.9	81.2	81.4	81.5	82.7
25	6300	87.1	89.1	86.3	88.1	87.7	86.5	82.7	80.8	80.3	80.0	81.8
26	8000	84.4	87.4	84.7	85.6	86.0	84.5	80.8	78.9	78.2	77.0	79.4
27	10000	80.5	86.1	83.0	83.5	84.8	83.4	79.1	78.0	78.1	78.1	79.2
28	12500	78.5	83.9	81.2	84.1	83.1	82.3	81.9	82.0	82.0	82.0	81.9
29	16000	80.0	83.6	77.8	83.9	82.0	81.8	86.7	86.7	86.7	86.7	86.7

FROM THE ORIGINAL DATA.

CONFIGURATION NO 214

SPEED = 3237. RPM

PERCENT SPEED = 86.0

LOSSLESS ARRAY

ORIGINAL PAGE IS  
OF POOR QUALITYRADIUS WITH NO ATMOSPHERIC ATTENUATION  
AND DIRECTIVITY COMPUTATIONS)

80. 90. 100. 110. 120. 130. 180.

111.2 109.8 111.7 112.1 114.1 113.8 117.5

102.5	99.5	102.0	99.3	99.8	102.0	101.5
101.8	99.5	101.5	99.8	102.7	104.5	106.2
103.3	100.2	101.7	103.5	106.7	104.7	108.8
103.3	101.8	104.7	103.0	104.3	104.8	110.3
100.7	101.3	102.5	102.8	104.2	104.5	109.5
101.3	99.2	101.7	101.7	103.7	104.7	108.0
98.3	97.7	99.3	100.5	101.5	102.3	106.3
96.9	98.0	98.5	100.0	103.0	102.4	105.9
96.2	96.0	96.4	99.2	101.4	100.5	104.2
96.0	95.0	97.0	99.2	101.9	100.0	102.9
93.7	93.7	95.2	98.0	99.9	97.2	100.4
93.4	93.2	94.6	97.1	99.1	96.4	98.6
90.7	90.6	92.7	96.1	98.4	94.6	96.2
89.9	89.9	91.6	95.4	96.4	93.1	95.1
88.4	88.9	90.8	93.9	95.3	91.6	92.8
88.3	88.1	90.1	93.1	94.1	91.6	92.6
86.5	87.0	88.7	91.8	92.8	89.3	91.5
84.9	84.9	87.4	89.7	91.1	87.9	90.9
85.0	86.8	87.2	89.0	89.7	89.2	90.8
82.5	83.2	85.2	86.8	88.0	85.0	88.7
83.3	82.6	84.2	85.7	86.6	83.6	87.6
86.4	85.1	84.1	84.8	85.9	83.4	86.8
82.2	81.0	82.0	82.8	83.5	82.2	85.3
82.9	81.2	81.4	81.5	82.7	81.7	84.5
82.7	80.8	80.3	80.0	81.8	80.6	83.7
80.8	78.9	78.2	77.0	79.4	78.5	81.7
79.1	78.0	78.1	78.1	79.2	78.0	81.4
81.9	82.0	82.0	82.0	81.9	82.0	81.8
86.7	86.7	86.7	86.7	86.7	86.7	86.7

SPL

## LOSSLESS DATA AT 100 FOOT RADIUS

QCSEE OTW ENGINE

SDOF INLET

FULLY SUPPRESSED ENGINE

ENGINE WITH T.O. FLAPS

READING NUMBERS = 94 95 96

CONFIGURATION NO = 214

SPEED = 3388. RPM

TEMPERATURE = 49.0 F

RELATIVE HUMIDITY = 55.0 PC

SIDELINE PLANE

BOOM MICROPHONES - LOSSLESS DATA

MIC # 14 15 16 17 18

R 0. 17. 31. 43. 54.

THETA,  $\theta_s$  90. 90. 90. 90. 90.

Z 106. 98. 91. 86. 81.

DISTANCE 91. 85. 82. 83. 86.

PHI,  $\phi$  0. 11. 22. 31. 39.

INDEX FREQ

1	25.	92.5	86.3	92.3	93.0	94.7
2	32.	93.5	90.2	95.9	96.2	99.0
3	40.	94.1	91.2	97.8	97.5	99.5
4	50.	94.1	94.9	98.4	98.5	100.7
5	63.	94.0	92.7	97.9	97.7	98.8
6	80.	95.3	94.2	97.9	96.9	98.0
7	100.	95.6	92.4	96.6	96.2	96.8
8	125.	95.2	94.6	96.8	98.0	99.0
9	160.	94.2	91.4	94.9	95.7	97.3
10	200.	94.5	92.1	95.6	95.9	97.0
11	250.	93.0	91.1	94.1	94.9	95.5
12	315.	92.0	89.2	93.8	94.0	95.7
13	400.	92.2	88.4	92.8	93.4	93.9
14	500.	91.7	88.6	91.8	92.4	93.5
15	630.	91.0	88.3	91.0	91.4	92.2
16	800.	90.7	87.8	90.3	90.9	91.4
17	1000.	89.8	86.5	89.4	90.1	90.6
18	1250.	88.6	85.9	88.6	89.0	89.3
19	1600.	90.9	87.4	88.1	92.2	88.4
20	2000.	86.1	83.2	85.7	86.5	86.3
21	2500.	84.9	82.3	84.3	84.9	86.3
22	3150.	86.4	83.2	84.7	85.5	86.5
23	4000.	85.9	82.2	83.4	84.2	85.0
24	5000.	85.6	82.1	82.1	83.3	84.4
25	6300.	85.8	82.5	81.0	83.1	83.5
26	8000.	84.0	80.1	78.4	81.5	81.6
27	10000.	84.4	80.1	75.6	80.0	80.3
28	12500.	84.7	78.9	71.5	77.0	77.9
29	16000.	84.4	78.1	70.2	76.4	76.9

OASPL

106.3 104.1 107.9 108.2 109.5

FOLDOUT FRAME

189

6

PEED = 3388. RPM

PERCENT SPEED

90.0

FGK

18282

HUMIDITY = 55.0 PC

BAROMETER = 29.26 IN HG

X111

.702

OUT FRAME

189

FOLDOUT FRAME

2

S.S. 70

16040



DATA OF 1024. SUBSET NO. 70. READINGS 94 95 96

QCSEE OTW ENGINE  
SDOF INLET  
FULLY SUPPRESSED ENGINE  
ENGINE WITH T.O. FLAPS

*SPL* LOSSLESS ARRAY

*FLYOVER PLANE* DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERIC  
(FOR POWER AND DIRECTIVITY COMPUTATION)

*ENGINE CENTERLINE MICROPHONES*

ANGLE,  $\theta$  60. 90.

COMPUTED OASPL 114.6 118.2

BAND FREQUENCY

1	25	104.5	107.2
2	32	106.0	110.5
3	40	107.9	111.2
4	50	107.0	110.0
5	63	102.5	109.5
6	80	103.2	107.2
7	100	101.5	105.0
8	125	101.0	104.0
9	160	99.4	101.5
10	200	95.8	98.6
11	250	95.2	97.1
12	315	94.1	98.6
13	400	95.9	98.3
14	500	94.8	98.3
15	630	93.5	97.1
16	800	93.8	95.8
17	1000	91.9	94.9
18	1250	91.6	92.8
19	1600	93.5	92.0
20	2000	89.2	89.9
21	2500	88.5	89.5
22	3150	90.7	89.4
23	4000	87.4	87.0
24	5000	86.6	87.8
25	6300	88.6	87.9
26	8000	87.6	83.1
27	10000	82.8	84.7
28	12500	82.6	88.3
29	16000	82.7	92.9

190

FOLDOUT FRAME

CONFIGURATION NO 214  
SPEED = 3388. RPM  
PERCENT SPEED. = 90.0

S S L E S S A R R A Y

ADIUS WITH NO ATMOSPHERIC ATTENUATION  
AND DIRECTIVITY COMPUTATIONS)

190

FOLDOUT FRAME

2

DATA OF 1224. SUBSET NO. 70. READINGS 94 95 96

SIX DECIBELS HAVE BEEN SUBTRACTED FROM THE ORIGINAL DATA.

QCSEE OTW ENGINE

SDOF INLET

FULLY SUPPRESSED ENGINE

ENGINE WITH T.O. FLAPS

SPL LOSSLESS ARRAY

ORIGINAL PAGE IS  
OF POOR QUALITY

FLYOVER PLANE

DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERIC  
(FOR POWER AND DIRECTIVITY COMPUTATION)

ANGLE  $\theta$  0. 30. 40. 50. 60. 70. 80. 90. 100. 110. 120.

COMPUTED OASPL 106.5 108.5 109.1 109.9 111.7 110.4 110.7 111.9 113.1 114.6 115.8

BAND FREQUENCY

1	25	89.2	93.5	97.0	98.0	103.0	101.0	99.8	99.7	99.5	102.7	102.5
2	32	91.3	98.7	100.8	100.5	102.3	101.7	101.3	102.2	103.3	102.2	105.3
3	40	91.8	100.8	102.3	103.5	106.0	101.7	101.5	103.3	104.3	106.0	106.5
4	50	97.2	102.0	101.3	103.2	102.8	101.2	101.8	103.8	105.5	106.7	106.5
5	63	96.8	99.5	100.2	99.2	99.5	99.5	101.8	102.8	103.2	104.5	105.7
6	80	98.0	98.2	96.8	96.7	98.5	99.2	100.8	101.5	103.0	104.5	105.3
7	100	96.8	95.2	93.5	95.2	97.7	98.7	98.7	100.3	102.0	102.7	103.5
8	125	95.5	92.9	95.2	96.5	99.0	97.9	98.4	99.4	100.9	102.5	105.7
9	160	93.4	93.0	94.9	95.5	97.2	96.2	97.2	98.4	98.9	101.2	103.7
10	200	92.0	93.2	93.4	94.2	95.4	96.5	96.4	97.4	98.9	101.4	104.0
11	250	88.7	90.7	91.0	91.7	94.2	94.5	94.5	95.4	97.2	99.5	101.9
12	315	87.2	89.6	88.6	90.9	93.1	93.9	94.7	95.2	96.2	99.6	100.9
13	400	86.1	87.7	87.9	90.9	92.7	93.1	92.4	93.6	95.2	98.7	100.2
14	500	84.8	86.1	86.9	89.3	90.1	90.8	90.8	92.1	94.6	97.6	97.9
15	630	84.3	85.6	88.4	87.9	89.3	88.9	91.3	91.6	93.4	97.1	97.1
16	800	82.5	84.5	85.0	87.6	90.0	89.6	89.6	91.0	92.6	95.3	95.5
17	1000	85.2	84.5	83.7	86.5	88.8	88.7	88.7	89.8	91.5	94.0	94.0
18	1250	87.3	85.9	83.4	85.8	87.1	86.4	86.8	87.9	89.8	92.3	92.3
19	1600	94.7	93.2	89.2	89.7	91.7	90.9	88.5	87.9	90.4	92.0	92.2
20	2000	85.8	84.3	81.8	83.8	85.0	84.0	84.0	85.7	87.7	89.5	89.2
21	2500	87.5	85.6	82.5	85.3	85.0	84.1	82.8	85.1	86.6	88.4	88.1
22	3150	91.4	89.0	85.7	88.7	89.2	86.8	83.8	85.0	86.0	87.3	86.8
23	4000	88.6	85.1	82.3	85.6	84.2	84.1	81.6	82.6	84.1	85.3	84.9
24	5000	89.2	84.7	82.1	85.9	84.7	84.6	81.2	82.2	83.0	83.5	83.9
25	6300	89.6	83.7	82.1	84.4	83.2	84.6	80.4	81.4	81.7	81.8	83.5
26	8000	87.2	80.2	80.2	81.8	81.2	82.5	78.2	78.5	79.5	78.8	80.8
27	10000	86.2	77.7	77.0	79.8	80.1	81.1	78.4	78.4	78.5	78.4	80.3
28	12500	83.9	73.3	75.8	78.1	82.2	82.1	82.3	82.3	82.3	82.3	82.2
29	16000	81.3	78.2	78.9	78.8	86.9	86.9	86.9	86.9	86.9	86.9	86.9

191

FOLDOUT FRAME

FROM THE ORIGINAL DATA.

CONFIGURATION NO 214  
 SPEED = 3388. RPM  
 PERCENT SPEED = 90.0

D S S I E S S A R R A Y

ORIGINAL PAGE IS  
 OF POOR QUALITY

RADIUS WITH NO ATMOSPHERIC ATTENUATION  
 AND DIRECTIVITY COMPUTATIONS)

80. 90. 100. 110. 120. 130. 180.

0.7 111.9 113.1 114.6 115.8 115.6 119.8

9.8	99.7	99.5	102.7	102.5	101.8	103.3
1.3	102.2	103.3	102.2	105.3	105.3	106.0
1.5	103.3	104.3	106.0	106.5	107.7	111.0
1.8	103.8	105.5	106.7	106.5	107.5	114.0
1.8	102.8	103.2	104.5	105.7	107.3	110.7
0.8	101.5	103.0	104.5	105.3	104.8	110.7
8.7	100.3	102.0	102.7	103.5	104.3	109.3
8.4	99.4	100.9	102.5	105.7	104.0	108.4
7.2	98.4	98.9	101.2	103.7	102.4	105.9
6.4	97.4	98.9	101.4	104.0	101.0	105.7
4.5	95.4	97.2	99.5	101.9	98.0	102.7
4.7	95.2	96.2	99.6	100.9	97.9	100.4
2.4	93.6	95.2	98.7	100.2	96.7	98.1
0.8	92.1	94.6	97.6	97.9	95.4	96.1
1.3	91.6	93.4	97.1	97.1	93.4	94.6
9.6	91.0	92.6	95.3	95.5	93.3	93.8
8.7	89.8	91.5	94.0	94.0	90.7	92.7
6.8	87.9	89.8	92.3	92.3	89.1	91.8
8.5	87.9	90.4	92.0	92.2	88.9	91.2
4.0	85.7	87.7	89.5	89.2	86.8	89.7
2.8	85.1	86.6	88.4	88.1	85.4	88.8
3.8	85.0	86.0	87.3	86.8	84.2	88.0
1.6	82.6	84.1	85.3	84.9	83.3	87.1
1.2	82.2	83.0	83.5	83.9	82.7	86.4
0.4	81.4	81.7	81.8	83.5	82.4	85.2
8.2	78.5	79.5	78.8	80.8	79.6	83.5
8.4	78.4	78.5	78.4	80.3	78.4	82.7
2.3	82.3	82.3	82.3	82.2	82.3	82.4
6.9	86.9	86.9	86.9	86.9	86.9	86.9

191

FOLDOUT FRAME

2

# *SPL* LOSSLESS DATA AT 100 FOOT RADIUS

QCSEE OTW ENGINE

SDOF INLET

FULLY SUPPRESSED ENGINE

ENGINE WITH T.O. FLAPS

READING NUMBERS = 97 98 99

CONFIGURATION NO = 214 SPEED = 3575. RPM

TEMPERATURE = 50.0 F

RELATIVE HUMIDITY = 55.0 PC

## *SIDELINE PLANE*

BOOM MICROPHONES - LOSSLESS DATA

MIC # 14 15 16 17 18

R 0. 17. 31. 43. 54.

THETA,  $\theta_s$  90. 90. 90. 90. 90.

Z 106. 98. 91. 86. 81.

DISTANCE 91. 85. 82. 83. 86.

PHI,  $\phi$  0. 11. 22. 31. 39.

INDEX FREQ

1	25.	91.8	89.9	90.8	94.7	93.5
2	32.	92.5	91.2	96.1	96.0	98.2
3	40.	93.3	93.0	95.9	98.5	100.8
4	50.	95.1	94.7	99.9	102.0	101.5
5	63.	97.0	95.1	98.1	99.7	100.7
6	80.	97.5	95.2	98.4	99.4	100.7
7	100.	97.3	93.6	96.6	98.4	99.8
8	125.	98.0	95.4	97.6	99.7	101.0
9	160.	95.5	93.4	96.1	98.0	99.7
10	200.	97.0	93.1	96.1	98.0	98.3
11	250.	95.0	91.1	95.4	96.0	97.2
12	315.	94.2	91.1	94.8	96.2	96.7
13	400.	94.5	90.3	94.3	95.1	96.0
14	500.	93.7	90.1	93.6	94.9	95.4
15	630.	92.0	89.6	92.3	93.2	94.2
16	800.	92.9	89.5	92.2	93.1	93.9
17	1000.	91.6	88.3	91.0	92.1	92.8
18	1250.	90.3	87.4	90.1	90.6	91.8
19	1600.	90.5	86.7	89.8	90.4	90.2
20	2000.	88.1	85.2	87.5	88.3	88.8
21	2500.	86.8	83.5	85.8	86.9	87.9
22	3150.	86.7	83.0	85.0	86.5	87.0
23	4000.	87.2	83.2	83.7	85.5	86.1
24	5000.	86.9	82.4	82.5	84.1	85.3
25	6300.	86.9	83.0	81.2	83.9	84.3
26	8000.	85.4	80.7	78.4	82.4	82.2
27	10000.	85.8	80.5	75.2	80.2	81.1
28	12500.	85.6	79.2	71.4	77.3	78.3
29	16000.	85.4	78.7	69.6	76.6	76.8

FOLDOUT FRAME 1

DASPL

107.9 105.3 108.5 110.1 111.0

99

SPEED = 3575. RPM

PERCENT SPEED

95.0

FGK 20352

E HUMIDITY = 55.0 PC

BAROMETER = 29.26 IN HG XMU .794

T FRAME 1

192

FOLDOUT FRAME

2

22. 71

DATA OF 1024. SUBSET NO. 71. READINGS 97 98 99

QCSEE OTW ENGINE  
SDOF INLET  
FULLY SUPPRESSED ENGINE  
ENGINE WITH T.O. FLAPS

*SPL* LOSSLESS ARRAY

*FLYOVER PLANE* DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERIC  
(FOR POWER AND DIRECTIVITY COMPUTATION)

*ENGINE CENTERLINE MICROPHONES*

ANGLE  $\theta_f$  60. 90.

COMPUTED DASPL 115.4 120.3

BAND FREQUENCY

1	25	104.2	111.0
2	32	107.2	113.4
3	40	108.9	112.2
4	50	107.4	111.9
5	63	104.9	111.5
6	80	104.7	109.0
7	100	102.2	106.9
8	125	103.0	106.0
9	160	99.4	102.9
10	200	97.4	100.2
11	250	94.6	99.4
12	315	95.7	100.2
13	400	95.4	100.9
14	500	94.4	100.3
15	630	94.5	98.8
16	800	94.0	98.0
17	1000	92.9	96.9
18	1250	91.1	95.1
19	1600	91.2	93.5
20	2000	88.5	92.4
21	2500	86.6	91.8
22	3150	85.1	90.3
23	4000	82.9	87.9
24	5000	81.2	88.8
25	6300	83.5	87.9
26	8000	82.0	83.7
27	10000	76.8	84.3
28	12500	78.4	88.2
29	16000	82.9	92.9

193

FOLDOUT FRAME |

CONFIGURATION NO 214  
SPEED = 3575. RPM  
PERCENT SPEED = 95.0

S S L E S S   A R R A Y

RADIUS WITH NO ATMOSPHERIC ATTENUATION  
AND DIRECTIVITY COMPUTATIONS)



DATA OF 1024. SUBSET NO. 71. READINGS 97 98 99

SIX DECIBELS HAVE BEEN SUBTRACTED FROM THE ORIGINAL DATA.

QCSEE QTW ENGINE

SDOF INLET

FULLY SUPPRESSED ENGINE

ENGINE WITH T.O. FLAPS

ORIGINAL PAGE IS  
OF POOR QUALITY

SPL LOSSLESS ARRAY

FLYOVER PLANE

DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERIC  
(FOR POWER AND DIRECTIVITY COMPUTATION)

ANGLE OF 0. 30. 40. 50. 60. 70. 80. 90. 100. 110. 120.

COMPUTED OASPL 107.4 110.3 110.1 111.3 110.9 112.0 112.3 113.4 115.0 117.0 118.3

BAND FREQUENCY

1	25	90.3	97.0	96.5	101.2	100.2	100.7	101.5	102.3	101.2	103.2	105.0
2	32	94.3	98.3	99.7	103.2	101.3	103.7	103.5	102.2	103.7	105.2	106.0
3	40	94.3	101.3	102.2	103.8	103.2	103.0	102.7	103.0	105.7	107.8	109.2
4	50	99.8	103.3	104.0	103.8	102.2	103.2	103.0	104.7	107.7	108.3	107.8
5	63	98.2	102.0	101.2	101.0	100.2	101.8	103.3	105.2	106.2	106.3	109.0
6	80	100.0	102.5	98.7	99.0	99.3	101.8	102.5	104.2	105.3	107.0	108.7
7	100	98.0	98.2	96.2	97.5	98.2	100.5	99.7	102.0	102.8	106.2	106.7
8	125	97.4	95.7	97.0	98.2	98.9	99.4	100.5	100.9	102.4	105.9	107.9
9	160	95.0	94.2	96.5	97.5	97.4	98.0	98.7	99.9	100.9	104.4	106.2
10	200	93.2	96.0	95.7	95.5	96.7	98.4	97.9	98.9	101.0	104.4	106.9
11	250	90.4	93.7	92.5	93.9	96.0	96.0	95.7	97.5	99.7	102.4	104.9
12	315	88.7	92.6	91.4	92.9	95.1	95.9	96.4	97.7	99.1	102.2	103.4
13	400	87.6	90.2	90.9	92.6	94.4	95.1	94.4	96.1	97.7	101.4	102.6
14	500	87.3	88.6	89.6	91.1	91.4	92.8	92.8	94.6	96.4	100.1	101.3
15	630	85.4	87.3	89.1	89.1	90.9	90.9	91.9	93.9	95.4	99.3	99.4
16	800	83.6	86.5	89.1	89.3	91.1	92.0	91.6	93.6	95.0	98.1	98.8
17	1000	82.9	84.8	86.3	87.2	89.5	90.2	90.3	91.8	94.0	96.8	97.0
18	1250	82.1	82.6	84.6	85.9	86.6	87.6	88.7	89.9	91.9	94.9	95.2
19	1600	84.0	85.2	86.0	86.8	85.3	86.8	87.0	90.2	91.3	94.2	93.5
20	2000	80.2	81.0	82.2	83.5	84.3	85.3	85.8	88.5	90.2	92.3	92.3
21	2500	79.9	78.8	80.4	81.6	82.4	83.4	84.1	86.6	88.4	91.1	91.1
22	3150	81.0	78.5	80.1	81.1	80.6	83.3	82.5	85.3	87.3	89.6	89.3
23	4000	78.7	76.0	78.2	79.4	78.7	81.6	81.1	84.2	85.7	87.9	87.4
24	5000	78.3	75.0	77.5	79.3	78.0	80.6	80.1	82.5	84.5	86.3	86.3
25	6300	76.9	75.0	77.1	78.6	77.3	80.3	79.3	81.6	83.3	84.6	85.6
26	8000	74.2	76.0	75.5	76.3	75.6	77.5	76.6	79.0	80.5	81.3	83.2
27	10000	73.6	78.4	78.4	78.4	78.4	78.3	79.6	78.6	79.7	80.5	82.8
28	12500	72.5	82.2	82.2	82.2	82.2	82.2	83.3	82.2	82.1	82.1	82.8
29	16000	76.8	86.9	86.9	86.9	86.9	86.9	86.8	86.9	86.9	86.9	87.8

194

FOLDOUT FRAME

FROM THE ORIGINAL DATA.

CONFIGURATION NO 214  
 SPEED = 3575. RPM  
 PERCENT SPEED = 95.0

D S S L E S S A R R A Y

ORIGINAL PAGE IS  
 OF POOR QUALITY

RADIUS WITH NO ATMOSPHERIC ATTENUATION  
 R AND DIRECTIVITY COMPUTATIONS)

80. 90. 100. 110. 120. 130. 180.

2.3 113.4 115.0 117.0 118.3 117.5 123.2

1.5	102.3	101.2	103.2	105.0	105.0	108.0
3.5	102.2	103.7	105.2	106.0	107.5	110.7
2.7	103.0	105.7	107.8	109.2	108.0	112.0
3.0	104.7	107.7	108.3	107.8	110.5	116.3
3.3	105.2	106.2	106.3	109.0	109.0	116.8
2.5	104.2	105.3	107.0	108.7	107.7	114.0
9.7	102.0	102.8	106.2	106.7	105.7	111.7
0.5	100.9	102.4	105.9	107.9	106.0	111.2
8.7	99.9	100.9	104.4	106.2	103.7	110.2
7.9	98.9	101.0	104.4	106.9	103.0	108.4
5.7	97.5	99.7	102.4	104.9	99.4	105.5
6.4	97.7	99.1	102.2	103.4	99.1	103.9
4.4	96.1	97.7	101.4	102.6	98.4	101.9
2.8	94.6	96.4	100.1	101.3	96.9	99.9
1.9	93.9	95.4	99.3	99.4	95.6	97.9
1.6	93.6	95.0	98.1	98.8	95.1	97.5
0.3	91.8	94.0	96.8	97.0	93.0	96.2
8.7	89.9	91.9	94.9	95.2	91.2	95.1
7.0	90.2	91.3	94.2	93.5	90.2	94.3
5.8	88.5	90.2	92.3	92.3	88.5	93.2
4.1	86.6	88.4	91.1	91.1	87.1	91.6
2.5	85.3	87.3	89.6	89.3	86.1	90.6
1.1	84.2	85.7	87.9	87.4	85.6	89.2
0.1	82.5	84.5	86.3	86.3	85.0	88.6
9.3	81.6	83.3	84.6	85.6	83.9	88.1
6.6	79.0	80.5	81.3	83.2	81.5	86.1
9.6	78.6	79.7	80.5	82.8	79.8	88.4
3.3	82.2	82.1	82.1	82.8	82.1	92.2
5.8	86.9	86.9	86.9	87.8	86.9	96.9

194

FOLDOUT FRAME

2

16890

# *SPL* LOSSLESS DATA AT 100 FOOT RADIUS

QCSEE OTW ENGINE

SDOF INLET

FULLY SUPPRESSED ENGINE

ENGINE WITH TAKEOFF FLAPS

READING NUMBERS = 100 101 102

CONFIGURATION NO = 214

SPEED = 3003. RPM

TEMPERATURE = 36.0 F

RELATIVE HUMIDITY = 97.0 PC

## *SIDELINE PLANE* BOOM MICROPHONES - LOSSLESS DATA

MIC # 14 15 16 17 18

R 0. 17. 31. 43. 54.

THETA,  $\theta_s$  90. 90. 90. 90. 90.

Z 106. 98. 91. 86. 81.

DISTANCE 91. 85. 82. 83. 86.

PHI,  $\phi$  0. 11. 22. 31. 39.

INDEX FREQ

1	25.	90.3	89.0	89.8	92.5	92.8
2	32.	91.3	90.9	92.9	95.2	94.8
3	40.	92.3	91.4	94.1	95.2	97.0
4	50.	92.5	94.0	97.3	96.5	98.7
5	63.	93.6	92.7	93.8	95.7	95.2
6	80.	93.0	93.2	94.8	95.2	94.5
7	100.	92.1	92.2	90.9	93.5	94.3
8	125.	92.6	93.2	93.1	94.9	95.7
9	160.	90.8	89.9	91.3	92.9	94.7
10	200.	92.0	90.6	91.4	92.0	94.0
11	250.	90.8	89.6	90.4	92.0	92.7
12	315.	89.0	88.1	89.6	91.4	92.3
13	400.	88.5	87.2	88.8	90.2	90.4
14	500.	88.0	86.9	88.1	89.6	89.5
15	630.	86.9	86.1	86.5	88.4	88.0
16	800.	87.7	86.6	87.5	87.7	88.2
17	1000.	86.6	85.5	85.5	86.6	87.1
18	1250.	87.1	84.7	85.4	86.1	86.6
19	1600.	86.6	83.9	84.7	84.8	86.0
20	2000.	82.9	81.4	81.8	82.4	83.2
21	2500.	83.5	82.1	82.4	82.9	83.7
22	3150.	84.6	82.8	82.9	83.9	84.7
23	4000.	84.9	83.4	81.5	83.0	83.5
24	5000.	83.3	81.0	79.3	80.7	81.8
25	6300.	84.4	82.6	79.6	81.6	82.4
26	8000.	83.2	81.4	77.5	81.0	82.0
27	10000.	83.8	80.9	74.6	78.7	80.4
28	12500.	83.7	80.5	72.1	77.0	79.0
29	16000.	82.8	79.0	69.9	76.1	76.8

OASPL

103.9 103.3 104.6 105.7 106.5

FOLDOUT FRAME

PS

102

SPEED = 3003. RPM

PERCENT SPEED

81.0

FGK 14071

ATIVE HUMIDITY = 97.0 PC

BAROMETER = 29.20 IN HG

X17-11 .569

ATA

5

S.S. 72

195

OUT FRAME 1

FOLDOUT FRAME 2

DATA OF 1027. SUBSET NO. 72. READINGS 100 101 102

OCSEE OTW ENGINE  
SDOE INLET  
FULLY SUPPRESSED ENGINE  
ENGINE WITH TAKEOFF FLAPS

SPL LOSSLESS ARRAY

FLYOVER PLANE

DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERIC  
(FOR POWER AND DIRECTIVITY COMPUTATION)

ENGINE CENTERLINE MICROPHONES

ANGLE,  $\theta$  60. 90.

COMPUTED OASPL 113.1 114.4

BAND FREQUENCY

1	25	104.4	107.2
2	32	106.5	107.4
3	40	106.4	105.7
4	50	104.2	106.5
5	63	100.9	104.5
6	80	99.4	101.9
7	100	98.4	100.5
8	125	97.7	99.2
9	160	94.2	96.0
10	200	93.1	92.7
11	250	92.1	93.4
12	315	93.2	95.1
13	400	92.9	93.7
14	500	91.1	93.1
15	630	89.6	91.9
16	800	90.3	91.3
17	1000	89.2	90.0
18	1250	89.4	88.6
19	1600	90.0	87.5
20	2000	86.4	86.1
21	2500	90.7	86.5
22	3150	92.8	86.8
23	4000	93.5	84.6
24	5000	91.9	84.8
25	6300	91.7	86.7
26	8000	91.7	82.9
27	10000	89.1	81.7
28	12500	89.0	80.5
29	16000	87.7	80.1

196

FOLDOUT FRAME

CONFIGURATION NO 214  
SPEED = 3003, RPM  
PERCENT SPEED = 81.0

LOSSLESS ARRAY

RADIUS WITH NO ATMOSPHERIC ATTENUATION  
(R AND DIRECTIVITY COMPUTATIONS)

196

FOLDOUT FRAME

2

16424

DATA OF 1027. SUBSET NO. 72. READINGS 100 101 102

SIX DECIBELS HAVE BEEN SUBTRACTED FROM THE ORIGINAL DATA.

QCSEE OTW ENGINE

SDOF INLET

FULLY SUPPRESSED ENGINE

ENGINE WITH TAKEOFF FLAPS

*SPL*

LOSSLESS ARRAY

ORIGINAL PAGE IS  
OF POOR QUALITY

*FLYOVER PLANE* DATA AT 100.0 FT RADIUS WITH NO ATMOSPHER  
(FOR POWER AND DIRECTIVITY COMPUTA

ANGLE,  $\theta$ , 0. 30. 40. 50. 60. 70. 80. 90. 100. 110. 120

COMPUTED DASPL 106.6 106.4 107.3 107.4 107.6 107.6 108.2 108.4 109.3 112.6 110

BAND FREQUENCY

1	25	90.3	92.8	97.0	94.7	97.0	97.2	97.8	100.3	100.8	104.8	99
2	32	90.0	94.2	98.5	98.0	98.8	100.0	101.3	99.5	99.7	102.5	101
3	40	93.3	96.7	98.3	100.0	101.2	99.0	100.0	98.5	98.7	104.2	101
4	50	95.2	98.7	99.2	99.8	98.0	96.8	97.7	99.5	101.3	104.3	102
5	63	95.2	96.7	96.7	97.5	95.2	95.8	99.0	99.2	100.2	101.0	100
6	80	96.0	95.0	94.2	92.5	94.2	96.8	97.2	97.3	98.0	102.2	100
7	100	95.8	92.3	90.5	91.8	93.7	95.7	94.8	95.8	97.7	99.0	99
8	125	95.2	90.5	91.5	94.0	94.5	94.8	94.7	96.0	96.8	100.0	100
9	160	92.0	89.5	91.7	91.9	91.9	94.0	94.0	94.0	94.9	98.7	97
10	200	91.0	91.4	91.5	91.0	90.7	92.7	92.5	93.5	94.5	98.2	98
11	250	88.2	88.5	88.4	88.9	90.2	92.0	91.7	91.4	93.0	96.4	97
12	315	85.9	86.4	86.9	87.7	90.4	90.9	91.0	91.4	92.7	96.0	95
13	400	85.4	85.4	86.2	87.9	87.9	88.4	88.6	89.6	90.7	94.7	94
14	500	83.9	83.9	85.6	86.1	87.6	87.4	86.7	88.2	90.2	93.4	93
15	630	82.6	82.9	84.3	84.3	84.9	86.4	86.4	87.4	88.6	92.3	92
16	800	84.4	82.8	84.6	84.8	86.1	86.9	86.9	86.9	88.3	91.6	91
17	1000	86.7	82.8	83.7	84.3	85.1	85.3	85.3	85.5	87.0	90.1	89
18	1250	91.2	89.7	87.5	86.5	85.7	85.2	83.5	84.4	86.2	87.9	88
19	1600	94.1	93.0	89.8	89.8	87.0	85.6	83.1	84.3	85.1	87.6	87
20	2000	88.6	87.4	87.6	85.1	84.3	83.1	81.3	81.8	84.1	85.9	85
21	2500	92.8	90.3	91.5	89.8	88.5	86.3	83.1	82.1	83.6	84.8	83
22	3150	94.6	92.8	94.5	92.8	90.6	88.5	85.8	83.5	83.8	83.6	83
23	4000	95.1	90.8	91.1	90.6	89.3	87.4	83.4	82.8	82.8	81.9	81
24	5000	92.3	89.6	89.7	88.5	87.4	85.0	81.4	80.4	81.2	79.9	80
25	6300	91.3	90.5	90.2	89.7	88.7	86.2	82.4	80.7	80.8	78.5	80
26	8000	90.7	89.3	87.6	87.8	87.5	84.6	81.0	79.8	78.8	76.0	78
27	10000	89.5	87.8	86.7	86.0	86.2	82.6	78.4	77.4	77.1	77.0	77
28	12500	87.2	85.2	85.8	84.8	85.7	81.1	77.5	76.6	75.2	80.4	80
29	16000	86.7	84.7	85.2	84.8	84.9	80.0	76.7	74.8	74.0	84.6	80

197

FOLDOUT FRAME

FROM THE ORIGINAL DATA.

CONFIGURATION NO 214

SPEED = 3003. RPM

PERCENT SPEED = 81.0

O S S L E S S A R R A Y

ORIGINAL PAGE IS  
OF POOR QUALITYT RADIUS WITH NO ATMOSPHERIC ATTENUATION  
ER AND DIRECTIVITY COMPUTATIONS)

80. 90. 100. 110. 120. 130. 180.

08.2 108.4 109.3 112.6 110.9 111.1 115.0

97.8	100.3	100.8	104.8	99.2	101.5	101.5
01.3	99.5	99.7	102.5	101.2	101.7	102.5
00.0	98.5	98.7	104.2	101.3	102.3	106.3
97.7	99.5	101.3	104.3	102.0	101.8	108.8
99.0	99.2	100.2	101.0	100.0	101.0	107.5
97.2	97.3	98.0	102.2	100.3	100.2	104.8
94.8	95.8	97.7	99.0	99.2	99.3	103.0
94.7	96.0	96.8	100.0	100.0	100.2	102.2
94.0	94.0	94.9	98.7	97.9	98.2	100.5
92.5	93.5	94.5	98.2	98.2	97.9	99.9
91.7	91.4	93.0	96.4	97.0	94.9	97.2
91.0	91.4	92.7	96.0	95.7	94.0	95.4
88.6	89.6	90.7	94.7	94.7	92.9	93.1
86.7	88.2	90.2	93.4	93.9	91.2	92.2
86.4	87.4	88.6	92.3	92.4	89.8	90.1
86.9	86.9	88.3	91.6	91.8	89.3	89.9
85.3	85.5	87.0	90.1	89.8	86.8	88.6
83.5	84.4	86.2	87.9	88.2	85.9	87.5
83.1	84.3	85.1	87.6	87.3	85.0	87.0
81.3	81.8	84.1	85.9	85.2	82.7	85.3
83.1	82.1	83.6	84.8	83.6	81.1	84.6
85.8	83.5	83.8	83.6	83.4	81.3	84.0
83.4	82.8	82.8	81.9	81.9	79.4	83.4
81.4	80.4	81.2	79.9	80.7	78.0	82.4
82.4	80.7	80.8	78.5	80.5	78.0	82.4
81.0	79.8	78.8	76.0	78.1	76.2	80.8
78.4	77.4	77.1	77.0	77.6	77.0	81.2
77.5	76.6	75.2	80.4	80.3	80.4	80.7
76.7	74.8	74.0	84.6	84.6	84.6	84.5



*SPL*

## LOSSLESS DATA AT 100 FOOT RADIUS

QCSEE QTW ENGINE

SDOF INLET

FULLY SUPPRESSED ENGINE

ENGINE WITH TAKEOFF FLAPS

READING NUMBERS = 103 104 105

CONFIGURATION NO = 214

SPEED = 3189. RPM

TEMPERATURE = 37.0 F

RELATIVE HUMIDITY = 94.0 PC

*SIDEWIND PLANE*

BOOM MICROPHONES - LOSSLESS DATA

MIC # 14 15 16 17 18

R 0. 17. 31. 43. 54.

THETA,  $\theta_s$  90. 90. 90. 90. 90.

Z 106. 98. 91. 86. 81.

DISTANCE 91. 85. 82. 83. 86.

PHI,  $\phi$  0. 11. 22. 31. 39.

INDEX FREQ

1 25. 90.0 90.0 91.9 92.7 94.8

2 32. 91.8 92.5 93.3 95.3 97.3

3 40. 92.3 93.0 95.6 97.5 98.3

4 50. 93.3 93.9 95.8 99.8 100.0

5 63. 94.5 94.7 95.6 95.7 96.8

6 80. 94.0 93.9 94.3 95.7 97.0

7 100. 92.6 91.4 93.1 94.2 96.7

8 125. 94.5 94.2 94.9 96.2 96.5

9 160. 92.7 92.2 92.4 94.5 95.8

10 200. 93.5 92.4 92.6 93.9 95.7

11 250. 92.3 91.2 92.8 93.5 94.0

12 315. 90.5 89.2 92.1 92.7 93.5

13 400. 90.2 88.9 90.8 90.9 92.4

14 500. 89.4 88.3 89.6 90.7 91.2

15 630. 87.9 86.9 88.6 89.6 89.9

16 800. 88.9 87.9 88.5 89.1 89.9

17 1000. 87.9 86.6 87.2 88.4 88.7

18 1250. 87.4 85.8 86.5 87.0 87.9

19 1600. 87.8 88.5 88.4 87.3 87.7

20 2000. 83.9 83.1 84.0 84.1 84.9

21 2500. 84.2 83.4 83.4 83.7 84.9

22 3150. 86.6 85.6 84.9 86.4 86.9

23 4000. 85.2 83.7 82.4 84.0 84.6

24 5000. 84.8 83.5 81.6 83.1 84.3

25 6300. 85.4 84.5 81.3 83.2 84.4

26 8000. 84.0 83.4 79.1 82.1 83.5

27 10000. 84.3 82.6 76.2 80.4 82.2

28 12500. 84.4 82.4 73.5 78.2 80.0

29 16000. 83.6 80.9 71.1 77.4 78.4

OASPL

104.9 104.6 105.6 107.2 108.2

FOLDOUT FRAME

198

105

SPEED = 3189. RPM

PERCENT SPEED

86.0

FGK 16093

VE HUMIDITY = 94.0 PC

BAROMETER = 29.20 IN HG

XMH .631

OUT FRAME /

198

FOLDOUT FRAME

2

SS. 73

16298

DATA OF 1027. SURSET NO. 73. READINGS 103 104 105

QCSEE OTW ENGINE  
SDOF INLET  
FULLY SUPPRESSED ENGINE  
ENGINE WITH TAKEOFF FLAPS

SPL LOSSLESS ARRAY

ORIGINAL PAGE IS  
OF POOR QUALITY

FLYOVER PLANE DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERE  
(FOR POWER AND DIRECTIVITY COMPUTATION)

ENGINE CENTERLINE MICROPHONES

ANGLE,  $\theta$  60. 90.

COMPUTED OASPL 114.1 114.7

BAND FREQUENCY

1	25	103.0	105.2
2	32	106.5	105.9
3	40	107.9	105.9
4	50	105.7	107.7
5	63	103.2	105.4
6	80	101.7	104.5
7	100	99.5	102.2
8	125	99.7	100.7
9	160	96.5	97.7
10	200	94.2	94.7
11	250	93.2	95.1
12	315	93.9	96.4
13	400	94.1	95.4
14	500	92.8	94.8
15	630	90.9	93.8
16	800	92.0	93.1
17	1000	91.2	91.8
18	1250	90.7	90.1
19	1600	96.0	89.8
20	2000	88.1	87.6
21	2500	90.3	87.3
22	3150	94.0	89.3
23	4000	92.2	85.1
24	5000	93.8	87.3
25	6300	91.9	88.4
26	8000	91.9	83.8
27	10000	89.7	83.0
28	12500	88.3	81.2
29	16000	86.7	80.1

199

FOLDOUT FRAME

CONFIGURATION NO 214  
SPEED = 3189. RPM  
PERCENT SPEED = 86.0

ORIGINAL PAGE IS  
OF POOR QUALITY

S S L E S S   A R R A Y

ADIUS WITH NO ATMOSPHERIC ATTENUATION  
AND DIRECTIVITY COMPUTATIONS)

199

FOLDOUT FRAME 2

DATA OF 1027. SUBSET NO. 73. READINGS 103 104 105

SIX DECIBELS HAVE BEEN SUBTRACTED FROM THE ORIGINAL DATA.  
 QCSEE OTW ENGINE  
 SDOF INLET  
 FULLY SUPPRESSED ENGINE  
 ENGINE WITH TAKEOFF FLAPS

ORIGINAL PAGE IS  
 OF POOR QUALITY

*SPL* LOSSLESS ARRAY  
*FLYOVER Plane* DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERIC  
 (FOR POWER AND DIRECTIVITY COMPUTATION)

ANGLE  $\theta$  0. 30. 40. 50. 60. 70. 80. 90. 100. 110. 120.

COMPUTED OASPL 108.5 108.5 109.4 108.2 108.9 109.0 112.2 110.6 111.2 112.6 113.

RAND FREQUENCY

1	25	91.8	94.8	97.2	97.2	98.3	99.2	103.0	99.2	100.3	101.5	102.
2	32	91.7	95.3	99.8	100.7	100.3	100.3	105.0	102.7	99.7	101.5	102.
3	40	93.2	100.7	101.0	98.3	101.7	99.5	103.8	101.8	102.3	103.0	103.
4	50	98.3	101.5	102.2	100.5	98.5	99.0	102.8	102.7	103.3	103.2	103.
5	63	95.8	99.3	99.5	97.7	97.5	99.0	102.5	100.5	102.0	102.8	102.
6	80	93.2	97.3	97.2	94.0	97.2	97.8	102.0	99.0	100.8	102.3	102.
7	100	98.7	92.5	92.2	94.2	95.3	96.8	98.5	97.7	98.8	101.0	101.
8	125	96.8	91.5	94.4	94.2	97.5	96.5	98.7	98.3	98.2	101.2	102.
9	160	94.9	91.7	94.7	93.5	94.4	96.0	95.7	96.4	97.7	99.7	100.
10	200	92.5	92.7	92.2	92.0	92.9	95.4	96.0	95.9	97.2	99.7	101.
11	250	89.0	90.2	90.2	90.4	91.9	93.9	94.9	94.2	95.7	97.9	98.
12	315	87.2	88.2	88.2	90.0	92.0	92.9	94.4	94.0	95.4	97.9	98.
13	400	86.6	87.1	87.7	89.6	90.2	90.2	91.7	92.1	93.7	96.7	97.
14	500	86.6	86.1	87.2	87.6	89.4	89.7	90.1	91.1	93.2	95.6	95.
15	630	84.8	84.9	86.3	86.8	87.1	88.6	89.6	89.6	92.3	94.6	93.
16	800	85.6	84.8	86.4	86.8	88.4	89.1	89.8	89.6	91.6	93.3	93.
17	1000	86.2	84.7	86.0	85.5	87.5	87.5	87.5	88.3	90.3	92.3	92.
18	1250	89.0	87.2	88.0	85.9	86.0	86.2	86.0	86.4	88.7	90.5	90.
19	1600	96.0	93.5	95.1	90.0	89.3	88.6	89.3	87.3	88.0	90.3	89.
20	2000	90.6	86.9	87.4	85.4	85.4	84.4	83.6	83.6	86.6	88.3	87.
21	2500	95.2	91.3	90.8	89.2	87.7	86.2	84.1	83.8	86.0	87.1	86.
22	3150	98.6	96.1	95.5	93.3	92.5	89.3	87.3	85.1	86.1	85.9	85.
23	4000	94.3	90.4	90.8	88.4	87.8	86.5	83.8	82.9	84.8	83.8	83.
24	5000	95.4	91.6	91.7	90.2	89.2	87.6	83.4	82.9	84.2	82.5	83.
25	6300	92.6	91.5	91.5	89.7	89.0	86.7	83.4	82.7	83.5	80.5	82.
26	8000	91.0	90.2	89.3	87.1	87.1	85.1	82.0	81.1	81.1	78.3	80.
27	10000	89.8	88.6	88.5	85.6	85.3	82.8	79.8	79.4	80.2	78.3	79.
28	12500	86.7	86.0	87.0	83.5	84.5	80.3	80.3	80.3	80.3	80.4	80.
29	16000	95.6	85.7	86.5	83.0	83.4	80.2	84.7	84.7	84.7	84.7	84.

200

FOLDOUT FRAME

104 105

TRACTED FROM THE ORIGINAL DATA.

CONFIGURATION NO 214  
SPEED = 3189. RPM  
PERCENT SPEED = 86.0

LOSSLESS ARRAY

ORIGINAL PAGE IS  
OF POOR QUALITY

00.0 FT RADIUS WITH NO ATMOSPHERIC ATTENUATION  
(OR POWER AND DIRECTIVITY COMPUTATIONS)

70. 80. 90. 100. 110. 120. 130. 180.

09.0 112.2 110.6 111.2 112.6 113.0 113.6 117.6

99.2	103.0	99.2	100.3	101.5	102.7	102.0	101.2
100.3	105.0	102.7	99.7	101.5	102.0	104.8	105.7
99.5	103.8	101.8	102.3	103.0	103.7	104.5	110.2
99.0	102.8	102.7	103.3	103.2	103.5	106.0	111.5
99.0	102.5	100.5	102.0	102.8	102.3	104.2	108.8
97.8	102.0	99.0	100.8	102.3	102.0	103.0	108.0
96.8	98.5	97.7	98.8	101.0	101.5	101.8	106.8
96.5	98.7	98.3	98.2	101.2	102.5	101.2	104.7
96.0	95.7	96.4	97.7	99.7	100.2	99.9	102.9
95.4	96.0	95.9	97.2	99.7	101.0	99.9	102.4
93.9	94.9	94.2	95.7	97.9	98.5	95.7	99.5
92.9	94.4	94.0	95.4	97.9	98.0	95.7	97.5
90.2	91.7	92.1	93.7	96.7	97.2	94.7	95.4
89.7	90.1	91.1	93.2	95.6	95.7	93.1	94.6
88.6	89.6	89.6	92.3	94.6	93.9	91.3	92.3
89.1	89.8	89.6	91.6	93.3	93.6	91.4	91.9
87.5	87.5	88.3	90.3	92.3	92.0	89.1	90.8
86.2	86.0	86.4	88.7	90.5	90.0	87.4	90.0
88.6	89.3	87.3	88.0	90.3	89.8	88.6	90.0
84.4	83.6	83.6	86.6	88.3	87.6	84.6	88.3
86.2	84.1	83.8	86.0	87.1	86.1	83.1	87.3
89.3	87.3	85.1	86.1	85.9	85.3	82.9	86.8
86.5	83.8	82.9	84.8	83.8	83.8	80.9	85.4
87.6	83.4	82.9	84.2	82.5	83.0	80.4	84.7
86.7	83.4	82.7	83.5	80.5	82.2	80.0	84.2
85.1	82.0	81.1	81.1	78.3	80.0	77.6	82.7
82.8	79.8	79.4	80.2	78.3	79.3	77.2	82.6
80.3	80.3	80.3	80.3	80.4	80.3	80.4	82.3
80.2	84.7	84.7	84.7	84.7	84.7	84.7	84.4

200

FOLDOUT FRAME

2

# *SPL* LOSSLESS DATA AT 100 FOOT RADIUS

QCSEE OTW ENGINE

SDOF INLET

ORIGINAL PAGE IS  
OF POOR QUALITY

FULLY SUPPRESSED ENGINE

ENGINE WITH TAKEOFF FLAPS

READING NUMBERS = 106 107 108

CONFIGURATION NO = 214 SPEED = 3388. RPM

TEMPERATURE = 38.0 F

RELATIVE HUMIDITY = 92.0 PC

## *SIDELINE PLANE* BOOM MICROPHONES - LOSSLESS DATA

MIC # 14 15 16 17 18

R 0. 17. 31. 43. 54.

THETA,  $\theta_s$  90. 90. 90. 90. 90.

Z 106. 98. 91. 86. 81.

DISTANCE 91. 85. 82. 83. 86.

PHI,  $\phi$  0. 11. 22. 31. 39.

INDEX FREQ

1	25.	93.3	90.5	93.4	93.2	95.3
2	32.	91.6	91.9	94.9	97.5	97.8
3	40.	95.0	95.0	95.1	98.5	98.7
4	50.	95.6	94.9	98.9	101.5	102.5
5	63.	96.0	94.5	96.1	97.8	100.2
6	80.	96.0	96.4	97.1	98.2	99.3
7	100.	94.5	94.4	95.6	97.0	98.0
8	125.	96.1	95.6	97.6	97.4	98.3
9	160.	94.7	93.1	94.8	95.5	97.7
10	200.	95.3	93.7	94.9	96.4	96.8
11	250.	94.0	91.9	94.4	95.2	95.8
12	315.	92.5	91.7	93.6	94.5	96.0
13	400.	92.7	90.9	92.6	93.5	94.2
14	500.	92.0	90.5	92.1	92.6	93.4
15	630.	90.5	90.3	91.5	91.4	92.5
16	800.	90.9	89.6	90.8	90.9	91.9
17	1000.	89.9	88.6	89.7	90.3	90.2
18	1250.	89.1	87.7	88.5	89.1	89.4
19	1600.	91.5	90.7	88.2	91.2	89.2
20	2000.	85.9	85.6	86.1	86.4	87.2
21	2500.	85.4	84.6	84.9	85.7	86.7
22	3150.	87.1	86.1	84.9	86.7	87.2
23	4000.	86.4	84.9	83.5	84.8	86.1
24	5000.	86.2	84.5	83.0	84.1	85.4
25	6300.	86.2	85.1	81.4	83.9	84.4
26	8000.	84.4	83.0	79.1	82.3	83.2
27	10000.	84.8	82.9	76.2	80.4	82.7
28	12500.	84.9	82.0	72.8	77.5	80.0
29	16000.	84.1	80.2	71.0	76.7	77.6

FOLDOUT FRAME /

201

04SPL

106.9 106.0 107.5 109.0 110.0

08

SPEED = 3388. RPM

PERCENT SPEED

90.0

FGH 17898

E HUMIDITY = 92.0 PC

BAROMETER = 29.20 IN HG XMU .696

SS. 74

FOLDOUT FRAME 2

NAME /

201



DATA OF 1027. SUBSET NO. 74. READINGS 106 107 108

QCSEE OTW ENGINE  
SDOF INLET  
FULLY SUPPRESSED ENGINE  
ENGINE WITH TAKEOFF FLAPS

ORIGINAL PAGE IS  
OF POOR QUALITY

SPL LOSSLESS ARRAY

FLYOVER PLANE

DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERE  
(FOR POWER AND DIRECTIVITY COMPUTATION)

ENGINE CENTERLINE MICROPHONES

ANGLE  $\theta$  60. 90.

COMPUTED DASPL 115.3 119.3

BAND FREQUENCY

1	25	103.9	109.2
2	32	108.9	111.4
3	40	109.0	112.7
4	50	106.9	112.9
5	63	103.9	109.4
6	80	101.5	106.9
7	100	101.4	105.0
8	125	101.4	104.2
9	160	98.4	100.7
10	200	95.7	98.4
11	250	94.7	98.6
12	315	95.2	98.6
13	400	95.6	98.7
14	500	94.3	97.9
15	630	93.3	96.9
16	800	93.5	95.8
17	1000	91.8	94.7
18	1250	91.6	92.9
19	1600	93.6	92.3
20	2000	88.3	90.1
21	2500	88.8	90.0
22	3150	91.6	89.5
23	4000	90.1	86.6
24	5000	90.9	88.1
25	6300	88.8	88.7
26	8000	88.3	83.4
27	10000	86.1	83.5
28	12500	84.7	86.4
29	16000	84.4	90.8

202

FOLDOUT FRAME /

CONFIGURATION NO 214  
SPEED = 3358. RPM  
PERCENT SPEED = 90.0

S S L E S S A R R A Y

RADIUS WITH NO ATMOSPHERIC ATTENUATION  
AND DIRECTIVITY COMPUTATIONS)

ORIGINAL PAGE IS  
OF POOR QUALITY

202

FOLDOUT FRAME 2

DATA OF 1027. SUBSET NO. 74. READINGS 106 107 108

SIX DECIBELS HAVE BEEN SUBTRACTED FROM THE ORIGINAL DATA.

QCSEE OTW ENGINE

SDOF INLET

FULLY SUPPRESSED ENGINE

ENGINE WITH TAKEOFF FLAPS

ORIGINAL PAGE IS  
OF POOR QUALITY.

*SPL* LOSSLESS ARRAY

*FLYOVER PLANE* DATA AT 100.0 FT. RADIUS WITH NO ATMOSPHERIC  
(FOR POWER AND DIRECTIVITY COMPUTATIONS)

ANGLE  $\theta$  0. 30. 40. 50. 60. 70. 80. 90. 100. 110. 120.

COMPUTED DASPL 108.6 108.9 110.0 110.1 112.2 110.7 111.2 112.1 113.0 115.1 115.1

BAND FREQUENCY

1	25	90.8	95.3	95.0	97.7	101.3	99.7	101.0	102.0	101.5	103.5	101.0
2	32	93.2	99.2	99.5	100.8	105.3	102.2	102.3	103.8	103.2	104.0	104.0
3	40	94.7	100.7	103.0	103.7	104.3	101.8	102.3	101.8	104.0	106.0	106.0
4	50	98.5	101.3	103.3	102.2	104.0	100.5	102.3	104.5	104.0	106.8	107.0
5	63	98.0	100.0	101.2	100.3	100.8	101.2	101.7	102.3	103.5	104.2	105.0
6	80	98.8	98.0	98.7	96.3	100.2	100.0	100.8	100.7	102.3	105.3	103.0
7	100	98.3	95.0	93.2	95.8	99.0	98.3	99.3	99.7	101.3	102.7	102.0
8	125	98.3	93.0	95.2	97.0	98.5	98.2	98.5	98.3	101.8	102.7	103.0
9	160	95.9	93.0	95.0	95.5	97.7	97.4	96.9	97.9	99.4	102.9	102.0
10	200	94.2	94.5	94.0	94.2	95.9	96.2	96.7	98.0	99.2	102.7	103.0
11	250	89.9	91.5	91.2	92.0	94.9	95.5	94.9	95.5	98.0	100.2	100.0
12	315	89.1	90.1	89.9	91.9	94.9	94.9	94.7	95.9	97.2	100.6	100.0
13	400	88.2	88.2	89.1	91.6	92.6	92.6	92.7	93.7	95.2	98.7	99.0
14	500	87.2	87.1	89.1	90.7	92.1	91.7	91.9	92.7	95.2	98.1	98.0
15	630	86.9	86.6	89.4	89.6	90.4	90.9	91.9	91.9	93.9	97.3	97.0
16	800	85.5	86.4	87.9	88.6	90.8	90.8	90.9	91.3	93.3	95.4	95.0
17	1000	88.2	86.0	86.5	88.0	89.7	89.8	89.1	90.0	92.3	94.5	93.0
18	1250	90.5	87.4	87.5	87.2	88.0	88.2	87.5	88.4	90.4	92.4	92.0
19	1600	97.3	93.1	93.5	91.3	92.5	90.0	88.5	88.6	90.5	92.6	91.0
20	2000	88.9	85.6	86.2	85.6	86.4	86.1	85.6	86.3	88.8	90.4	89.0
21	2500	91.2	87.8	87.8	86.8	86.5	86.1	84.8	85.8	87.6	89.5	88.0
22	3150	95.8	92.3	92.3	90.5	88.6	89.1	85.8	85.9	87.3	87.3	86.0
23	4000	92.4	88.8	88.8	87.8	86.3	85.9	83.6	83.9	85.8	85.3	85.0
24	5000	93.4	89.9	89.7	88.6	86.5	85.9	83.4	83.5	85.0	83.8	84.0
25	6300	92.0	89.2	89.1	87.8	86.0	84.5	82.5	82.3	84.0	81.4	83.0
26	8000	90.5	87.1	86.3	84.7	83.4	82.4	79.9	80.3	81.3	79.2	81.0
27	10000	89.5	85.4	85.5	82.9	82.1	80.6	78.1	78.7	80.5	79.8	80.0
28	12500	87.3	82.6	83.5	80.8	80.8	80.2	80.4	80.3	80.2	80.3	80.0
29	16000	86.7	82.2	83.4	80.2	84.7	84.7	84.7	84.7	84.7	84.7	84.0

203

FOLDOUT FRAME 1

FROM THE ORIGINAL DATA.

CONFIGURATION NO 214  
SPEED = 3388. RPM  
PERCENT SPEED = 90.0

LOSSLESS ARRAY

RADIUS WITH NO ATMOSPHERIC ATTENUATION  
(R AND DIRECTIVITY COMPUTATIONS)

ORIGINAL PAGE IS  
OF POOR QUALITY

80. 90. 100. 110. 120. 130. 180.

112.1 113.0 115.1 115.2 115.4 119.6

1.0	102.0	101.5	103.5	101.8	103.8	99.5
2.3	103.8	103.2	104.0	104.2	105.8	106.8
2.3	101.8	104.0	106.0	106.3	106.0	111.5
2.3	104.5	104.0	106.8	107.2	107.5	113.3
1.7	102.3	103.5	104.2	105.7	107.0	112.5
0.8	100.7	102.3	105.3	103.5	106.0	109.8
9.3	99.7	101.3	102.7	102.3	104.5	107.8
8.5	98.3	101.8	102.7	103.5	103.2	107.3
6.9	97.9	99.4	102.9	102.0	100.9	105.7
6.7	98.0	99.2	102.7	103.5	100.7	104.5
4.9	95.5	98.0	100.2	100.7	97.2	101.4
4.7	95.9	97.2	100.6	100.2	97.6	99.6
2.7	93.7	95.2	98.7	99.7	96.6	97.2
1.9	92.7	95.2	98.1	98.1	95.1	96.1
1.9	91.9	93.9	97.3	97.1	93.3	94.4
0.9	91.3	93.3	95.4	95.6	93.1	93.8
9.1	90.0	92.3	94.5	93.8	90.6	92.5
7.5	88.4	90.4	92.4	92.2	89.0	92.0
8.5	88.6	90.5	92.6	91.1	90.0	91.1
5.6	86.3	88.8	90.4	89.1	86.6	89.8
4.8	85.8	87.6	89.5	88.1	84.8	88.8
5.8	85.9	87.3	87.3	86.9	84.1	87.9
3.6	83.9	85.8	85.3	85.4	82.4	87.3
3.4	83.5	85.0	83.8	84.4	81.5	86.0
2.5	82.3	84.0	81.4	83.5	80.7	85.7
9.9	80.3	81.3	79.2	81.3	78.8	83.8
8.1	78.7	80.5	79.8	80.5	77.9	83.9
0.4	80.3	80.2	80.3	80.9	80.4	82.9
4.7	84.7	84.7	84.7	84.7	84.7	84.4

*SPL*

## LOSSLESS DATA AT 100 FOOT RADIUS

QCSEE QTW ENGINE

SDOF INLET

FULLY SUPPRESSED ENGINE

ENGINE WITH TAKEOFF FLAPS

ORIGINAL PAGE IS  
OF POOR QUALITY

READING NUMBERS = 109 114 115

CONFIGURATION NO = 214

SPEED = 3522. RPM

TEMPERATURE = 39.0 F

RELATIVE HUMIDITY = 88.0 PC

*STOBLINE PLANE*

## BOOM MICROPHONES - LOSSLESS DATA

MIC #	14	15	16	17	18
R	0.	17.	31.	43.	54.
THETA, $\theta_s$	90.	90.	90.	90.	90.
Z	106.	98.	91.	86.	81.
DISTANCE	91.	85.	82.	83.	86.
PHI, $\phi$	0.	11.	22.	31.	39.

INDEX FREQ

1	25.	88.9	92.4	92.6	96.0	98.7
2	32.	90.6	94.5	97.3	96.7	103.0
3	40.	92.8	94.9	97.1	99.2	106.2
4	50.	94.0	96.4	99.4	100.5	104.7
5	63.	96.0	96.7	100.1	99.0	102.5
6	80.	97.0	96.7	99.4	99.7	101.5
7	100.	96.3	95.6	96.6	98.4	100.0
8	125.	97.2	97.4	98.1	99.5	102.3
9	160.	95.5	95.2	95.9	98.4	100.2
10	200.	96.5	95.1	96.4	97.4	99.8
11	250.	95.0	94.1	96.1	96.0	98.5
12	315.	93.7	93.1	95.6	96.2	98.5
13	400.	94.0	93.1	94.5	95.5	96.5
14	500.	93.7	92.4	93.5	94.4	96.4
15	630.	91.9	91.4	92.3	94.1	94.9
16	800.	92.4	91.3	92.7	93.6	94.6
17	1000.	91.7	90.3	91.5	92.4	93.4
18	1250.	90.9	89.7	90.4	91.1	92.8
19	1600.	91.0	89.2	89.6	90.7	91.8
20	2000.	87.6	87.1	87.8	88.4	89.4
21	2500.	86.5	86.1	86.3	87.0	88.5
22	3150.	87.1	85.9	85.1	86.5	87.9
23	4000.	87.4	86.4	84.6	86.2	87.3
24	5000.	87.0	85.2	83.0	84.6	86.3
25	6300.	87.0	85.8	81.9	84.1	85.1
26	8000.	85.2	83.4	79.3	83.0	83.7
27	10000.	85.4	83.0	76.4	80.4	83.3
28	12500.	85.7	82.5	72.9	77.1	80.4
29	16000.	85.1	81.4	70.7	76.5	79.2

FOLDOUT FRAME |

OASPL

107.4 107.3 109.1 110.0 113.3

204

ORIGINAL PAGE IS  
OF POOR QUALITY

115

SPEED = 3522. RPM

PERCENT SPEED 95.0

FGK 20066

WET HUMIDITY = 88.0 PC

BAROMETER = 29.20 IN HG

XMH .792

SS. 75

FRAME 1

204

FOLDOUT FRAME

2

16236

DATA OF 1027. SUBSET NO. 75. READINGS 109 114 115

QCSEE OTW ENGINE  
SDOF INLET  
FULLY SUPPRESSED ENGINE  
ENGINE WITH TAKEOFF FLAPS

*SPL* LOSSLESS ARRAY

*FLYOVER PLANE* DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERE  
(FOR POWER AND DIRECTIVITY COMPUTATION)

*ENGINE CENTERLINE MICROPHONES*

ANGLE,  $\theta$ , 60. 90.

COMPUTED OASPL 115.9 118.8

BAND FREQUENCY

1	25	106.5	108.2
2	32	108.4	109.0
3	40	108.2	109.9
4	50	108.0	111.9
5	63	105.2	111.0
6	80	103.7	108.9
7	100	102.9	105.4
8	125	102.5	104.4
9	160	99.9	101.4
10	200	98.2	99.1
11	250	96.1	99.1
12	315	96.4	100.2
13	400	98.6	100.4
14	500	96.1	99.8
15	630	95.9	99.1
16	800	95.5	97.8
17	1000	94.8	97.2
18	1250	92.9	94.9
19	1600	91.1	93.6
20	2000	88.9	92.6
21	2500	87.5	91.7
22	3150	86.8	90.0
23	4000	86.0	87.7
24	5000	86.1	88.5
25	6300	83.9	88.5
26	8000	82.8	84.0
27	10000	83.5	83.4
28	12500	86.6	86.6
29	16000	90.9	90.9

205

FOLDOUT FRAME /

CONFIGURATION NO 214  
SPEED = 3522. RPM  
PERCENT SPEED = 95.0

LOSSLESS ARRAY

FT RADIUS WITH NO ATMOSPHERIC ATTENUATION  
(POWER AND DIRECTIVITY COMPUTATIONS)

205

FOLDOUT FRAME 2



DATA OF 1027. SUBSET NO. 75. READINGS 109 114 115

SIX DECIBELS HAVE BEEN SUBTRACTED FROM THE ORIGINAL DATA.

QCSEE OTW ENGINE

SDOF INLET

FULLY SUPPRESSED ENGINE

ENGINE WITH TAKEOFF FLAPS

*SPL* LOSSLESS ARRAY

ORIGINAL PAGE IS  
OF POOR QUALITY

*FLYOVER Range*

DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERIC  
(FOR POWER AND DIRECTIVITY COMPUTATION)

ANGLE, ~~θ~~ 0. 30. 40. 50. 60. 70. 80. 90. 100. 110. 120

COMPUTED OASPL 109.1 110.7 110.9 110.4 111.0 111.8 112.6 113.4 115.2 117.1 117.1

BAND FREQUENCY

1	25	93.2	98.2	98.5	97.8	99.0	100.7	100.3	102.2	101.7	104.5	103.0
2	32	92.8	99.5	101.8	101.2	101.5	102.3	102.7	103.0	104.3	107.8	105.0
3	40	96.7	100.7	104.0	102.3	103.0	103.0	102.8	102.8	103.7	107.2	107.0
4	50	100.8	103.8	103.2	101.8	101.8	102.2	104.0	105.0	107.2	108.2	106.0
5	63	101.2	102.7	101.8	101.7	100.8	101.7	103.8	104.5	106.3	105.8	108.0
6	80	101.8	101.5	99.0	98.3	99.7	101.5	103.7	104.0	106.2	106.8	107.0
7	100	100.0	100.2	95.8	97.0	99.2	100.2	100.3	101.7	103.5	105.8	105.0
8	125	99.0	97.2	97.2	98.4	99.7	99.7	100.4	100.7	104.4	105.7	106.0
9	160	96.7	95.4	97.0	97.4	97.9	98.9	98.7	100.5	101.7	104.4	104.0
10	200	94.7	96.2	96.0	96.2	96.2	98.0	97.9	99.2	101.4	104.5	105.0
11	250	90.7	94.0	93.4	94.5	95.7	97.2	96.9	97.4	99.0	101.7	103.0
12	315	89.9	92.7	91.9	94.1	95.1	96.6	96.9	98.2	100.1	102.4	102.0
13	400	88.9	91.6	91.9	93.6	92.9	94.4	95.4	96.1	98.2	101.7	102.0
14	500	88.6	89.7	91.6	91.9	93.2	93.6	93.6	95.1	97.1	100.6	100.0
15	630	86.9	88.3	91.1	90.9	91.1	92.8	93.1	94.1	96.3	99.6	98.0
16	800	85.5	88.0	90.5	91.3	91.5	92.8	93.0	94.0	95.6	98.1	98.0
17	1000	85.0	86.8	88.7	89.5	90.8	91.2	91.7	92.3	95.0	96.7	96.0
18	1250	84.0	85.4	87.4	87.5	88.2	89.0	90.0	91.0	93.2	95.0	94.0
19	1600	88.6	89.1	87.8	90.0	87.5	88.3	88.1	90.1	92.5	94.1	93.0
20	2000	82.4	83.6	85.1	85.6	86.1	86.9	87.3	88.9	91.4	92.8	92.0
21	2500	81.6	82.0	83.8	84.0	84.5	85.5	86.0	87.6	90.0	91.8	90.0
22	3150	83.5	82.3	83.5	83.3	84.0	85.1	85.0	87.0	88.8	89.9	89.0
23	4000	81.5	80.6	81.5	82.3	82.5	84.0	83.8	85.3	87.8	87.8	87.0
24	5000	81.4	80.2	81.4	81.6	81.6	82.7	82.9	84.4	86.7	86.2	86.0
25	6300	79.5	79.7	80.7	81.0	80.9	81.2	81.8	83.0	85.9	83.7	86.0
26	8000	77.7	77.5	77.7	77.3	78.5	79.2	78.5	80.7	83.0	81.7	84.0
27	10000	76.5	77.3	77.1	77.1	77.2	77.5	77.7	79.1	82.4	82.0	83.0
28	12500	73.8	80.6	80.6	80.6	80.6	80.6	80.5	80.5	80.6	81.5	81.0
29	16000	75.4	84.9	84.9	84.9	84.9	84.9	84.9	84.9	84.9	84.8	84.0

206

FOLDOUT FRAME

FROM THE ORIGINAL DATA.

CONFIGURATION NO 214

SPEED = 3522. RRM

PERCENT SPEED = 95.0

LOSSLESS ARRAY

T RADIUS WITH NO ATMOSPHERIC ATTENUATION  
(R AND DIRECTIVITY COMPUTATIONS)ORIGINAL PAGE IS  
OF POOR QUALITY

80. 90. 100. 110. 120. 130. 180.

12.6 113.4 115.2 117.1 117.2 116.0 122.1

00.3	102.2	101.7	104.5	103.7	102.7	105.8
02.7	103.0	104.3	107.8	105.2	105.3	110.3
02.8	102.8	103.7	107.2	107.7	106.0	113.0
04.0	105.0	107.2	108.2	106.2	108.3	115.8
03.8	104.5	106.3	105.8	108.5	107.7	114.7
03.7	104.0	106.2	106.8	107.2	106.8	112.3
00.3	101.7	103.5	105.8	105.7	104.5	110.7
00.4	100.7	104.4	105.7	106.5	105.0	109.7
98.7	100.5	101.7	104.4	104.9	102.5	107.2
97.9	99.2	101.4	104.5	105.5	101.7	107.2
96.9	97.4	99.0	101.7	103.7	99.2	105.0
96.9	98.2	100.1	102.4	102.7	99.2	103.2
95.4	96.1	98.2	101.7	102.1	97.7	100.4
93.6	95.1	97.1	100.6	100.4	95.7	99.4
93.1	94.1	96.3	99.6	98.6	94.8	96.4
93.0	94.0	95.6	98.1	98.1	94.6	96.6
91.7	92.3	95.0	96.7	96.3	92.2	94.7
90.0	91.0	93.2	95.0	94.9	90.5	94.0
88.1	90.1	92.5	94.1	93.8	90.3	93.1
87.3	88.9	91.4	92.8	92.4	87.6	91.8
86.0	87.6	90.0	91.8	90.5	86.0	91.1
85.0	87.0	88.8	89.9	89.5	84.8	90.5
83.8	85.3	87.8	87.8	87.6	83.5	89.3
82.9	84.4	86.7	86.2	86.4	82.4	88.4
81.8	83.0	85.9	83.7	86.0	82.4	87.9
78.5	80.7	83.0	81.7	84.2	79.7	86.2
77.7	79.1	82.4	82.0	83.1	79.0	87.1
80.5	80.5	80.6	81.5	81.9	80.5	90.6
84.9	84.9	84.9	84.8	84.7	84.9	94.9

206

FOLDOUT FRAME

2

*SPL* LOSSLESS DATA AT 100 FOOT RADIUS

QCSEE OTW ENGINE

SDOF INLET

ORIGINAL PAGE IS  
OF POOR QUALITY

FULLY SUPPRESSED ENGINE

ENGINE WITH APPROACH FLAPS

READING NUMBERS = 117 118 119

CONFIGURATION NO = 114

SPEED = 1825. RPM

PER

TEMPERATURE = 30.0 F

RELATIVE HUMIDITY = 51.0 PC

*SIDELINE PLANE*

BOOM MICROPHONES - LOSSLESS DATA

MIC # 14 15 16 17 18

R 0. 17. 31. 43. 54.

THETA,  $\theta_s$  90. 90. 90. 90. 90.

Z 106. 98. 91. 86. 81.

DISTANCE 91. 85. 82. 83. 86.

PHI,  $\phi$  0. 11. 22. 31. 39.

INDEX FREQ

1	25.	91.3	78.4	80.6	81.2	82.0
2	32.	79.6	81.4	82.1	83.3	82.8
3	40.	80.5	80.9	80.4	82.5	83.0
4	50.	83.1	85.2	85.9	88.3	89.8
5	63.	83.3	82.4	81.6	81.5	84.5
6	80.	91.3	81.1	80.1	80.0	80.8
7	100.	80.0	79.1	78.3	79.7	82.0
8	125.	78.0	79.1	77.8	78.9	78.7
9	160.	77.3	76.7	76.4	78.5	80.0
10	200.	78.8	79.7	78.3	79.5	81.8
11	250.	78.0	77.2	77.6	78.4	79.3
12	315.	76.5	74.7	74.6	76.2	76.8
13	400.	74.7	73.4	72.6	73.7	74.7
14	500.	72.8	71.3	71.0	72.4	72.7
15	630.	73.9	71.8	70.3	72.1	72.7
16	800.	78.9	77.8	74.6	77.2	76.4
17	1000.	75.1	73.1	71.0	72.6	72.6
18	1250.	74.4	72.7	70.4	71.6	71.3
19	1600.	72.3	70.7	68.9	70.2	70.5
20	2000.	69.1	67.5	66.0	67.3	67.8
21	2500.	68.3	67.2	65.4	66.8	67.8
22	3150.	68.1	66.6	64.4	65.9	66.9
23	4000.	69.1	67.3	64.1	66.1	67.4
24	5000.	72.4	69.2	65.2	67.3	68.5
25	6300.	76.9	74.6	69.9	72.2	72.8
26	8000.	75.1	74.1	68.5	73.5	73.4
27	10000.	76.1	73.2	65.4	70.1	70.5
28	12500.	81.0	77.3	65.1	69.9	70.4
29	16000.	73.3	69.3	58.7	64.0	63.4

OASPL 92.6 92.2 91.6 93.3 94.1

FOLDOUT FRAME /

207

ORIGINAL PAGE IS  
OF POOR QUALITY

9  
PEED = 1825. RPM

PERCENT SPEED

47.0

FGK 4739

HUMIDITY = 91.0 PC

BAROMETER = 29.29 IN HG

XM11 .286

FRAME /

207

FOLDOUT FRAME

S.S. 76

2

DATA OF 1108. SUBSET NO. 76. READINGS 117 118 119

QCSEE OTW ENGINE

SDCE INLET

FULLY SUPPRESSED ENGINE

ENGINE WITH APPROACH FLAPS

*SPL*

LOSSLESS ARRAY

*FLYOVER PLANE*

DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERIC AT  
(FOR POWER AND DIRECTIVITY COMPUTATIONS)

*ENGINE CENTERLINE MICROPHONES*

ANGLE,  $\theta$ , 60. 90.

COMPUTED GASPL 100.0 98.3

BAND FREQUENCY

1	25	93.9	92.4
2	32	92.0	90.0
3	40	89.7	88.5
4	50	89.9	91.0
5	63	84.5	88.0
6	80	84.5	84.5
7	100	84.5	84.0
8	125	79.7	80.7
9	160	78.2	79.0
10	200	78.2	80.4
11	250	78.1	78.9
12	315	76.2	77.9
13	400	75.4	77.4
14	500	73.3	74.9
15	630	72.4	73.9
16	800	82.3	78.3
17	1000	76.3	74.2
18	1250	76.8	71.9
19	1600	79.5	71.2
20	2000	75.5	68.7
21	2500	77.3	69.7
22	3150	77.1	69.6
23	4000	78.9	68.9
24	5000	80.3	68.6
25	6300	87.7	75.3
26	8000	89.3	74.9
27	10000	86.9	71.6
28	12500	79.6	70.0
29	16000	79.6	69.8

208

FOLDOUT FRAME

119

CONFIGURATION NO 114  
SPEED = 1825. RPM  
PERCENT SPEED = 47.0

S S L E S S   A R R A Y

RADIUS WITH NO ATMOSPHERIC ATTENUATION  
AND DIRECTIVITY COMPUTATIONS)

208

FOLDOUT FRAME 2

DATA OF 1108. SUBSET NO. 76. READINGS 117 118 119

SIX DECIBELS HAVE BEEN SUBTRACTED FROM THE ORIGINAL DATA.  
 QCSEE OTW ENGINE  
 SDCF INLET  
 FULLY SUPPRESSED ENGINE  
 ENGINE WITH APPROACH FLAPS

ORIGINAL PAGE IS  
 OF POOR QUALITY

SPL LOSSLESS ARRAY

FLYOVER PLANE DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERIC  
 (FOR POWER AND DIRECTIVITY COMPUTATION)

		ANGLE, $\theta$	0.	30.	40.	50.	60.	70.	80.	90.	100.	140.	150.
		COMPUTED CASPI	113.6	98.7	99.6	97.9	97.2	94.8	93.3	93.6	93.7	96.9	97.9
		BAND FREQUENCY											
1	25	84.7	84.2	91.0	88.7	90.5	88.5	87.0	86.2	85.2	90.5	91.8	
2	32	84.0	86.8	89.0	87.7	87.2	85.3	84.8	83.7	85.3	90.8	91.7	
3	40	95.5	86.5	89.7	86.2	85.8	82.7	81.7	81.8	83.7	87.7	89.2	
4	50	86.7	85.8	87.8	86.2	86.7	86.0	84.7	88.0	86.7	89.0	89.8	
5	63	86.2	83.3	93.3	81.8	92.2	82.7	83.0	83.5	83.8	85.8	86.2	
6	80	81.8	79.8	79.5	79.2	82.8	81.3	80.3	80.7	81.3	82.3	83.7	
7	100	82.5	80.7	81.2	81.5	81.2	81.5	79.5	79.5	80.3	79.7	80.7	
8	125	80.7	79.0	81.2	81.2	78.5	78.7	78.9	77.5	79.7	76.9	79.7	
9	160	78.0	78.7	78.7	78.7	78.4	77.5	76.2	76.5	77.7	75.2	76.4	
10	200	87.2	80.5	82.5	79.9	80.0	78.5	78.7	78.0	79.5	81.0	79.9	
11	250	80.0	77.9	77.4	78.4	77.4	76.4	76.7	77.0	79.5	77.2	77.9	
12	315	74.7	75.0	74.7	75.4	74.9	74.4	74.2	74.2	75.2	72.5	74.5	
13	400	72.6	73.6	73.9	73.7	72.2	71.6	70.7	71.2	73.9	72.9	72.9	
14	500	71.7	72.6	71.9	72.2	72.2	71.4	69.9	70.9	69.9	70.6	71.1	
15	630	73.4	73.6	73.1	72.9	71.4	70.9	68.9	69.6	69.1	69.8	69.3	
16	800	86.1	86.6	84.8	85.3	79.0	78.0	75.6	75.5	73.3	77.1	75.8	
17	1000	82.5	79.7	78.7	77.5	75.0	72.8	70.7	70.3	70.2	75.0	75.3	
18	1250	84.2	81.1	80.2	77.4	75.1	72.2	68.9	69.1	69.1	73.2	73.9	
19	1600	86.8	84.8	83.7	80.5	77.7	74.8	71.3	70.3	68.8	70.7	72.0	
20	2000	83.7	80.4	79.7	77.4	75.0	71.0	67.0	66.9	66.0	67.0	67.8	
21	2500	83.3	83.3	81.3	79.8	76.3	72.3	67.5	66.5	66.1	66.1	67.1	
22	3150	83.2	81.7	81.2	78.7	76.1	71.9	65.6	65.2	64.6	65.2	66.9	
23	4000	84.2	82.0	80.7	79.9	77.1	73.2	66.9	65.2	64.2	66.9	69.6	
24	5000	83.8	81.7	81.8	81.0	77.8	73.6	67.8	66.4	65.1	69.6	73.2	
25	6300	101.0	88.9	89.7	89.3	84.5	80.6	75.6	72.1	69.9	73.5	76.1	
26	8000	95.5	92.7	92.7	89.4	88.8	82.1	76.2	72.9	69.5	70.8	72.3	
27	10000	85.6	85.4	83.7	84.8	84.1	79.9	72.5	69.6	66.6	69.0	70.1	
28	12500	87.5	81.6	80.0	79.0	78.1	73.5	67.0	65.2	65.5	72.9	73.9	
29	16000	87.1	81.2	82.1	79.3	77.7	73.4	65.1	63.6	63.6	73.8	68.2	

209

FOLDOUT FRAME /

119

FROM THE ORIGINAL DATA.

CONFIGURATION NO 114

SPEED = 1825. RPM

PERCENT SPEED = 47.0

S S L E S S   A R R A Y

ORIGINAL PAGE IS  
OF POOR QUALITYRADIUS WITH NO ATMOSPHERIC ATTENUATION  
AND DIRECTIVITY COMPUTATIONS)

0.   90.   100.   140.   150.   160.   180.

.3   93.6   93.7   96.9   97.9   102.1   100.5

.0	86.2	85.2	90.5	91.8	97.2	94.0
.8	83.7	85.3	90.8	91.7	96.8	92.0
.7	81.8	83.7	87.7	89.2	91.5	90.2
.7	88.0	86.7	89.0	89.8	93.3	91.7
.0	83.5	83.9	85.8	86.2	89.7	91.2
.3	80.7	81.3	82.3	83.7	87.2	89.8
.5	79.5	80.3	79.7	80.7	85.0	88.0
.9	77.5	79.7	76.9	79.7	83.7	86.0
.2	76.5	77.7	75.2	76.4	81.2	84.0
.7	78.0	79.5	81.0	79.9	82.2	84.0
.7	77.0	79.5	77.2	77.9	78.5	82.5
.2	74.2	75.2	72.5	74.5	76.2	79.9
.7	71.2	73.9	72.9	72.9	76.2	78.7
.9	70.9	69.9	70.6	71.1	73.9	76.7
.9	69.6	69.1	69.8	69.3	73.6	76.4
.6	75.5	73.3	77.1	75.8	76.3	77.9
.7	70.3	70.2	75.0	75.3	73.2	75.3
.9	69.1	69.1	73.2	73.9	72.7	73.2
.3	70.3	68.8	70.7	72.0	71.0	71.7
.0	66.9	66.0	67.0	67.8	68.7	70.2
.5	66.5	66.1	66.1	67.1	67.5	69.0
.6	65.2	64.6	65.2	66.9	67.4	67.9
.9	65.2	64.2	66.9	69.6	67.9	67.9
.8	66.4	65.1	69.6	73.2	70.4	69.6
.6	72.1	69.9	73.5	76.1	74.7	73.5
.2	72.9	69.5	70.8	72.3	72.0	71.7
.5	69.6	66.6	69.0	70.1	71.2	72.3
.0	65.2	65.5	72.9	73.9	74.4	77.5
.1	63.6	63.6	73.8	68.2	73.7	73.8

209

FOLDOUT FRAME 2



# *SPL* LOSSLESS DATA AT 100 FOOT RADIUS

OCSEF OTW ENGINE

SDOF INLET

ORIGINAL PAGE IS  
OF POOR QUALITY

FULLY SUPPRESSED ENGINE

ENGINE WITH APPROACH FLAPS

READING NUMBERS = 120 121 122

CONFIGURATION NO = 114

SPEED = 2991. RPM

TEMPERATURE = 32.0 F

RELATIVE HUMIDITY = 92.0 PC

*SIDELINE PLANE*

BOOM MICROPHONES - LOSSLESS DATA

MIC # 14 15 16 17 18

R 0. 17. 31. 43. 54.

THETA,  $\theta_s$  90. 90. 90. 90. 90.

Z 106. 98. 91. 86. 81.

DISTANCE 91. 85. 82. 83. 86.

PHI,  $\phi$  0. 11. 22. 31. 39.

INDEX FREQ

1	25.	88.0	92.4	90.3	95.2	98.7
2	32.	91.3	91.5	95.3	94.2	97.3
3	40.	92.5	94.0	94.6	96.7	97.5
4	50.	94.8	96.0	95.1	97.8	98.3
5	63.	94.3	95.5	94.3	94.3	94.8
6	80.	93.3	95.1	94.3	94.0	95.7
7	100.	94.0	92.9	91.6	95.7	95.7
8	125.	94.0	92.9	92.8	94.2	96.3
9	160.	92.7	91.9	91.8	93.7	94.8
10	200.	92.8	92.1	92.9	94.4	95.5
11	250.	91.8	91.6	91.6	93.9	94.3
12	315.	89.8	89.9	90.8	93.0	93.2
13	400.	89.7	88.7	89.1	91.4	92.4
14	500.	89.0	88.4	88.3	90.2	91.4
15	630.	87.5	87.3	87.1	88.9	89.7
16	800.	87.7	87.1	87.0	88.6	88.9
17	1000.	86.4	86.1	85.7	87.9	88.1
18	1250.	86.3	85.2	84.7	86.3	86.8
19	1600.	85.2	84.1	83.4	85.4	86.0
20	2000.	82.4	82.0	81.0	83.3	84.1
21	2500.	83.4	82.8	82.0	83.4	84.8
22	3150.	84.0	83.2	82.5	83.3	85.6
23	4000.	84.2	84.0	81.7	83.1	84.3
24	5000.	82.9	81.7	78.5	81.3	82.5
25	6300.	84.2	83.3	79.4	82.2	83.2
26	8000.	82.9	82.3	77.5	81.5	82.3
27	10000.	83.1	81.8	75.0	79.5	81.3
28	12500.	83.1	81.7	72.8	78.1	79.8
29	16000.	82.5	80.3	70.9	77.4	78.2

FOLDOUT FRAME /

OASPL

104.6 104.9 104.7 106.5 107.8

ORIGINAL PAGE IS  
OF POOR QUALITY

2

PEED = 2991. RPM

PERCENT SPEED 81.0

FGK 13934

HUMIDITY = 92.0 PC

BAROMETER = 29.29 IN HG

XMM .567

FRAME 1

FOLDOUT FRAME

2

S.S. 77

210

DATA OF 1108. SUBSET NO. 77. READINGS 120 121 122

QCSEE OTW ENGINE

SDOF INLET

FULLY SUPPRESSED ENGINE

ENGINE WITH APPROACH FLAPS

*SPL*

LOSSLESS ARRAY

*FLYOVER PLANE* DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERIC A  
(FOR POWER AND DIRECTIVITY COMPUTATION)

*ENGINE CENTERLINE MICROPHONES*

ANGLE  $\theta_r$  60. 90.

COMPUTED OASPL 111.8 117.2

BAND FREQUENCY

1	25	103.2	111.5
2	32	105.2	109.0
3	40	103.5	108.0
4	50	100.7	109.4
5	63	99.9	107.7
6	80	101.9	105.2
7	100	100.4	102.7
8	125	96.7	99.7
9	160	92.7	97.0
10	200	91.9	95.4
11	250	92.4	95.2
12	315	91.9	96.1
13	400	90.9	95.9
14	500	90.9	93.9
15	630	88.6	91.9
16	800	89.0	91.6
17	1000	88.0	89.8
18	1250	88.7	88.2
19	1600	88.2	86.5
20	2000	85.8	84.7
21	2500	89.1	85.9
22	3150	89.7	86.7
23	4000	92.3	85.7
24	5000	90.1	83.2
25	6300	91.3	86.1
26	8000	89.5	83.8
27	10000	89.1	83.7
28	12500	88.2	86.9
29	16000	87.6	90.5

211

FOLDOUT FRAME /

122

CONFIGURATION NO 114  
SPEED = 2991. RPM  
PERCENT SPEED = 81.0

LOSSLESS ARRAY

WAVELENGTH RADIUS WITH NO ATMOSPHERIC ATTENUATION  
(FOR POWER AND DIRECTIVITY COMPUTATIONS)

211

FOLDOUT FRAME

2

DATA OF 1108, SUBSET NO. 77. READINGS 120 121 122

SIX DECIBELS HAVE BEEN SUBTRACTED FROM THE ORIGINAL DATA.  
QCSEE OTW ENGINE  
SDOF INLET  
FULLY SUPPRESSED ENGINE  
ENGINE WITH APPROACH FLAPS

ORIGINAL PAGE IS  
OF POOR QUALITY

*SPL* LOSSLESS ARRAY

*Flyover Plane* DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERIC A  
(FOR POWER AND DIRECTIVITY COMPUTATIONS)

ANGLE, *θ* 0. 30. 40. 50. 60. 70. 80. 90. 100. 140. 150.

COMPUTED DASPL 108.1 110.6 110.0 110.0 109.8 109.7 109.6 110.1 111.0 110.3 116.4 1

BAND FREQUENCY

1	25	95.8	101.3	100.2	100.7	101.8	100.7	101.0	100.0	99.2	100.3	101.7	10
2	32	98.0	101.8	101.5	101.5	102.7	103.2	100.2	100.5	100.5	103.0	106.2	10
3	40	98.0	103.3	103.2	104.3	100.3	98.8	99.8	102.2	104.3	103.8	110.2	11
4	50	99.2	102.5	102.0	99.3	98.3	99.2	101.3	102.8	104.7	104.3	111.0	11
5	63	99.7	100.2	97.8	95.7	96.5	99.5	101.0	100.3	101.5	100.0	108.2	11
6	80	97.5	98.0	94.0	95.0	99.3	99.7	97.7	98.8	99.3	97.0	106.7	10
7	100	94.0	93.5	95.3	97.2	98.7	97.0	98.0	97.5	97.5	92.0	102.5	10
8	125	91.7	95.4	96.7	97.9	95.7	96.7	96.5	96.4	97.5	90.7	99.0	10
9	160	90.5	95.4	95.2	93.0	94.4	95.0	94.9	95.5	95.5	88.7	94.4	10
10	200	89.5	93.0	90.2	93.4	92.9	94.2	93.2	94.9	95.0	91.3	92.5	10
11	250	89.0	89.5	90.9	91.9	93.7	92.9	93.4	94.0	94.5	91.5	91.5	9
12	315	86.5	90.0	89.0	90.7	92.0	91.2	92.2	92.4	90.9	87.9	89.0	9
13	400	84.2	88.1	87.6	88.7	88.4	89.7	90.4	90.2	90.7	84.1	88.2	9
14	500	82.6	85.6	86.2	87.2	88.9	89.9	90.1	89.9	87.6	84.6	86.6	9
15	630	81.4	85.1	85.1	86.9	86.9	88.4	87.8	87.1	86.4	82.3	85.9	9
16	800	83.6	85.4	85.1	86.4	87.4	88.1	87.6	87.1	86.9	83.8	86.1	9
17	1000	85.3	85.2	84.0	85.3	86.0	86.7	86.3	85.7	85.3	83.7	85.7	9
18	1250	90.4	90.2	89.4	88.1	86.7	87.1	84.9	84.6	84.2	83.1	85.1	9
19	1600	92.5	92.7	91.5	89.3	87.3	87.0	84.8	84.3	83.8	81.7	84.2	8
20	2000	87.7	88.2	87.2	85.5	85.5	84.5	83.0	82.3	80.8	79.5	82.2	8
21	2500	92.1	91.8	91.6	89.8	89.3	86.9	83.9	82.7	81.3	79.4	81.2	8
22	3150	93.5	93.5	93.6	92.2	90.8	88.3	84.1	82.8	81.5	78.8	80.6	8
23	4000	94.4	93.0	91.9	92.0	90.2	87.5	85.2	83.6	80.4	79.1	80.9	8
24	5000	91.6	90.9	90.1	89.3	88.0	85.4	82.6	81.3	78.4	77.8	80.6	8
25	6300	91.2	91.9	91.2	90.9	89.8	86.6	83.6	82.4	79.2	77.2	79.5	8
26	8000	90.4	90.3	89.0	89.1	88.5	85.1	82.6	81.3	77.3	76.6	77.2	8
27	10000	90.2	89.9	88.0	87.5	87.2	83.5	80.7	79.7	77.7	77.9	77.9	8
28	12500	89.0	88.5	86.8	86.2	86.9	83.4	80.9	80.8	80.8	80.8	80.8	8
29	16000	88.6	87.0	86.6	86.1	85.7	84.2	84.4	84.4	84.4	84.4	84.4	8

212

FOLDOUT FRAME /

FROM THE ORIGINAL DATA.

CONFIGURATION NO 114

SPEED = 2991. RPM

PERCENT SPEED = 81.0

LOSSLESS ARRAY

ORIGINAL PAGE IS  
OF POOR QUALITYET RADIUS WITH NO ATMOSPHERIC ATTENUATION  
AND DIRECTIVITY COMPUTATIONS)

80. 90. 100. 140. 150. 160. 180.

109.6 110.1 111.0 110.3 116.4 118.6 120.3

101.0 100.0 99.2 100.3 101.7 103.8 107.8

100.2 100.5 100.5 103.0 106.2 107.8 109.3

99.8 102.2 104.3 103.8 110.2 111.0 113.5

101.3 102.8 104.7 104.3 111.0 112.3 112.0

101.0 100.3 101.5 100.0 108.2 111.2 112.2

97.7 98.8 99.3 97.0 106.7 108.5 109.5

98.0 97.5 97.5 92.0 102.5 106.8 107.5

96.5 96.4 97.5 90.7 99.0 104.5 107.0

94.9 95.5 95.5 88.7 94.4 102.7 106.4

93.2 94.9 95.0 91.3 92.5 102.2 105.7

93.4 94.0 94.5 91.5 91.5 99.4 103.7

92.2 92.4 90.9 87.9 89.0 97.2 102.2

90.4 90.2 90.7 84.1 88.2 96.6 101.1

90.1 89.9 87.6 84.6 86.6 93.9 99.4

87.8 87.1 86.4 82.3 85.9 92.9 97.8

87.6 87.1 86.9 83.8 86.1 92.4 96.6

86.3 85.7 85.3 83.7 85.7 92.2 95.7

84.9 84.6 84.2 83.1 85.1 90.6 94.1

84.8 84.3 83.8 81.7 84.2 89.7 92.7

83.0 82.3 80.8 79.5 82.2 88.2 91.0

83.9 82.7 81.3 79.4 81.2 86.9 89.4

84.1 82.8 81.5 78.8 80.6 85.3 88.0

85.2 83.6 80.4 79.1 80.9 84.9 86.4

82.6 81.3 78.4 77.8 80.6 83.6 84.6

83.6 82.4 79.2 77.2 79.5 83.2 84.1

82.6 81.3 77.3 76.6 77.2 81.0 85.3

80.7 79.7 77.7 77.9 77.9 80.6 87.8

80.9 80.8 80.8 80.8 80.8 80.7 90.8

84.4 84.4 84.4 84.4 84.4 84.4 94.4

212

FOLDOUT FRAME 2

SPL

## LOSSLESS DATA AT 100 FOOT RADIUS

QCSEE OTW ENGINE

SDOF INLET

FULLY SUPPRESSED ENGINE

ENGINE WITH APPROACH FLAPS

ORIGINAL PAGE IS  
OF POOR QUALITY

READING NUMBERS = 123 124 125 126

CONFIGURATION NO = 114

SPEED = 3513. RPM

PEI

TEMPERATURE = 32.0 F

RELATIVE HUMIDITY = 92.0 PC

STOBLINK PLANE

800M MICROPHONES - LOSSLESS DATA

MIC # 14 15 16 17 18

R 0. 17. 31. 43. 54.

THETA,  $\theta_s$  90. 90. 90. 90. 90.

Z 106. 98. 91. 86. 81.

DISTANCE 91. 85. 82. 83. 86.

PHI,  $\phi$  0. 11. 22. 31. 39.

INDEX FREQ

1	25.	94.5	95.3	94.9	99.7	100.2
2	32.	94.4	96.5	98.5	100.1	101.3
3	40.	96.6	98.7	98.9	102.7	102.5
4	50.	99.3	100.7	99.3	102.8	103.4
5	63.	100.8	99.0	98.3	103.1	101.7
6	80.	98.9	99.3	98.1	100.5	102.5
7	100.	97.6	97.6	96.1	100.6	101.3
8	125.	97.9	98.7	97.0	100.2	102.0
9	160.	97.8	97.7	96.9	100.0	101.3
10	200.	97.8	97.3	97.1	100.7	101.4
11	250.	96.0	96.2	95.6	99.5	100.8
12	315.	95.7	95.4	95.7	98.9	100.4
13	400.	95.2	94.6	94.9	98.1	99.4
14	500.	94.7	94.3	94.2	97.4	98.6
15	630.	92.9	93.5	92.5	96.1	97.2
16	800.	93.0	92.7	92.3	95.5	96.1
17	1000.	92.1	92.1	91.0	94.6	94.6
18	1250.	91.1	91.2	89.6	92.6	93.4
19	1600.	90.8	91.6	88.2	91.2	92.8
20	2000.	88.4	88.3	86.8	89.9	90.8
21	2500.	87.3	87.2	85.4	88.1	89.5
22	3150.	87.0	86.9	84.4	87.5	88.8
23	4000.	87.4	86.9	83.3	86.4	88.0
24	5000.	86.7	85.7	81.8	85.3	86.8
25	6300.	86.8	86.1	81.3	85.1	86.0
26	8000.	85.2	84.3	78.7	83.2	84.0
27	10000.	85.2	83.9	76.2	81.8	83.8
28	12500.	95.1	83.2	73.5	78.8	80.6
29	16000.	84.4	81.9	72.4	78.6	79.0

FOLDDOUT FRAME 1

OASPL

109.5 109.7 109.0 112.5 113.3

ORIGINAL PAGE IS  
OF POOR QUALITY

5 126

SPEED = 3513. RPM

PERCENT SPEED 95.0

FEK 19876

HUMIDITY = 92.0 PC

BAROMETER = 29.30 IN HG

XMU .784

FOLDOUT FRAME 2 23. 70

FRAME 1

213



DATA OF 1108. SUBSET NO. 78. READINGS 123 124 125 126

QCSEE OTW ENGINE  
SDOE INLET

FULLY SUPPRESSED ENGINE  
ENGINE WITH APPROACH FLAPS

*SPL*

LOSSLESS ARRAY

*FLYOVER PLANE*

DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERIC A  
(FOR POWER AND DIRECTIVITY COMPUTATION)

*ENGINE CENTERLINE MICROPHONES*

ANGLE,  $\theta$ , 60. 90.

COMPUTED OASPL 117.9 120.2

BAND FREQUENCY

1	25	108.4	109.5
2	32	111.3	109.6
3	40	109.9	112.0
4	50	108.3	113.9
5	63	107.0	112.5
6	80	108.2	109.5
7	100	106.3	107.5
8	125	103.9	105.8
9	160	100.3	103.0
10	200	98.0	100.0
11	250	97.6	100.2
12	315	98.4	101.8
13	400	98.8	101.8
14	500	98.7	99.7
15	630	97.0	97.7
16	800	96.4	97.3
17	1000	95.9	95.7
18	1250	94.4	93.4
19	1600	92.7	91.5
20	2000	91.4	90.8
21	2500	89.6	89.8
22	3150	88.2	89.6
23	4000	88.0	87.6
24	5000	87.6	86.0
25	6300	86.1	87.1
26	8000	84.0	83.3
27	10000	83.7	83.7
28	12500	86.9	86.9
29	16000	90.5	90.5

214

FOLDOUT FRAME /

125 126

CONFIGURATION NO 114  
SPEED = 3513. RPM  
PERCENT SPEED = 95.0

LOSSLESS ARRAY

ET RADIUS WITH NO ATMOSPHERIC ATTENUATION  
(POWER AND DIRECTIVITY COMPUTATIONS)

214

FOLDOUT FRAME 2

DATA OF 1109. SUBSET NO. 78. READINGS 123 124 125 126

SIX DECIBELS HAVE BEEN SUBTRACTED FROM THE ORIGINAL DATA.  
QCSEE CTW ENGINE  
SDOF INLET  
FULLY SUPPRESSED ENGINE  
ENGINE WITH APPROACH FLAPS

ORIGINAL PAGE IS  
OF POOR QUALITY

SPL LOSSLESS ARRAY

*FLYOVER PLANE* DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERIC  
(FOR POWER AND DIRECTIVITY COMPUTATION)

ANGLE,  $\theta$ , 0. 30. 40. 50. 60. 70. 80. 90. 100. 140. 150.

COMPUTED DASPL 111.0 112.5 113.2 114.2 114.0 114.9 115.5 115.8 116.1 115.2 121.9

BAND FREQUENCY

1	25	98.3	99.8	104.0	104.4	102.9	105.6	104.4	103.8	104.4	105.4	108.9
2	32	100.0	103.6	104.6	105.9	105.6	104.5	106.0	106.9	106.4	106.6	111.9
3	40	100.8	104.8	105.3	106.3	105.6	104.6	105.3	107.6	107.9	109.1	112.9
4	50	104.8	105.4	105.4	105.8	103.3	104.9	107.4	108.4	110.3	109.4	115.5
5	63	103.6	103.1	103.6	102.5	102.3	105.5	107.6	106.8	106.6	105.5	115.4
6	80	102.3	101.5	98.3	102.0	105.0	106.1	104.9	105.0	105.9	101.1	113.6
7	100	97.9	97.4	100.9	103.4	103.5	103.5	104.1	102.8	103.0	97.6	108.6
8	125	98.3	98.5	101.9	103.3	101.4	103.5	102.0	102.9	102.6	96.6	105.5
9	160	95.5	99.9	99.3	98.5	99.9	100.6	101.1	101.9	101.6	95.0	102.4
10	200	94.0	98.5	95.4	98.9	99.2	100.2	100.0	100.7	99.5	94.8	101.4
11	250	92.4	93.9	95.9	96.9	98.8	99.7	100.4	100.0	98.7	94.5	99.7
12	315	92.0	95.2	95.0	96.5	97.5	98.3	98.7	98.2	96.7	94.2	97.9
13	400	89.7	93.6	93.6	94.4	94.8	96.4	97.1	96.2	95.9	92.6	96.3
14	500	88.6	91.2	92.2	93.3	95.9	96.7	97.4	95.9	93.3	90.2	95.3
15	630	87.3	90.8	93.1	93.5	94.3	95.5	95.0	93.3	92.3	89.0	93.8
16	800	85.9	90.5	91.4	93.0	94.5	95.4	94.5	92.9	92.7	89.1	93.7
17	1000	85.0	89.4	89.4	91.7	93.0	93.7	93.2	91.7	91.2	89.3	93.7
18	1250	84.2	87.7	88.0	89.7	91.6	92.2	91.3	90.0	89.0	88.8	92.2
19	1600	86.3	89.5	89.0	89.1	91.0	91.8	91.6	89.6	89.1	87.6	91.5
20	2000	81.6	85.4	86.4	87.9	90.0	89.7	89.1	87.7	87.1	86.1	90.2
21	2500	81.1	82.7	84.9	86.6	88.2	88.5	87.7	86.4	85.5	84.6	88.4
22	3150	81.9	83.8	84.3	85.4	87.1	87.0	86.2	85.4	84.6	83.9	87.6
23	4000	80.2	82.0	82.6	84.2	85.7	85.7	85.0	84.2	83.0	82.5	86.7
24	5000	79.6	81.0	82.4	83.7	84.6	85.0	83.6	83.5	82.5	82.0	86.4
25	6300	78.1	80.5	81.2	82.5	83.9	83.5	82.7	82.6	82.2	81.1	85.1
26	8000	75.9	77.8	78.5	79.9	81.2	80.7	79.9	80.1	79.2	79.3	85.3
27	10000	77.8	77.8	77.9	78.7	80.3	80.0	78.9	79.2	77.6	79.3	87.8
28	12500	80.8	80.8	80.8	80.8	80.7	81.0	80.8	80.8	80.8	80.8	90.8
29	16000	84.4	84.4	84.4	84.4	84.4	84.4	84.4	84.4	84.4	84.4	94.4

215

FOLDOUT FRAME

125 126

FROM THE ORIGINAL DATA.

CONFIGURATION NO 114

SPEED = 3513. RPM

PERCENT SPEED = 95.0

S S L E S S A R R A Y

ORIGINAL PAGE IS  
OF POOR QUALITYRADIUS WITH NO ATMOSPHERIC ATTENUATION  
(AND DIRECTIVITY COMPUTATIONS)

00. 90. 100. 140. 150. 160. 180.

115.5 115.8 116.1 115.2 121.9 124.5 125.4

115.4	103.8	104.4	105.4	108.9	105.8	106.0
116.0	106.9	106.4	106.6	111.9	109.6	110.4
115.3	107.6	107.9	109.1	112.9	113.0	114.9
117.4	108.4	110.3	109.4	115.5	117.5	117.3
117.6	106.8	106.6	105.5	115.4	117.3	117.6
115.9	105.0	105.9	101.1	113.6	115.8	116.0
114.1	102.8	103.0	97.6	108.6	115.3	114.4
112.0	102.9	102.6	96.6	105.5	112.9	114.1
111.1	101.9	101.6	95.0	102.4	111.3	113.0
110.0	100.7	99.5	94.8	101.4	110.5	113.5
109.4	100.0	98.7	94.5	99.7	108.2	111.9
108.7	98.2	96.7	94.2	97.9	105.5	110.3
107.1	96.2	95.9	92.6	96.3	105.9	108.8
107.4	95.9	93.3	90.2	95.3	102.7	106.7
105.0	93.3	92.3	89.0	93.8	101.6	105.3
104.5	92.9	92.7	89.1	93.7	100.4	103.9
103.2	91.7	91.2	89.3	93.7	99.4	102.2
101.3	90.0	89.0	88.8	92.2	98.2	101.1
101.6	89.6	89.1	87.6	91.5	96.7	99.7
99.1	87.7	87.1	86.1	90.2	95.9	98.2
97.7	86.4	85.5	84.6	88.4	94.1	96.6
96.2	85.4	84.6	83.9	87.6	93.0	94.7
95.0	84.2	83.0	82.5	86.7	91.7	93.5
93.6	83.5	82.5	82.0	86.4	90.5	92.1
92.7	82.6	82.2	81.1	85.1	89.4	91.0
90.9	80.1	79.2	79.3	85.3	87.3	88.5
89.9	79.2	77.6	79.3	87.8	87.7	88.2
80.8	80.8	80.8	80.8	90.8	90.8	90.8
84.4	84.4	84.4	84.4	94.4	94.4	94.4

215

FOLDOUT FRAME

2

# SPL LOSSLESS DATA AT 100 FOOT RADIUS

QCSEE OTW ENGINE

SDOF INLET

FULLY SUPPRESSED ENGINE

ORIGINAL PAGE IS  
OF POOR QUALITY

ENGINE WITH APPROACH FLAPS

READING NUMBERS = 127 128 129 130

CONFIGURATION NO = 114

SPEED = 3175. RPM

PER

TEMPERATURE = 34.0 F

RELATIVE HUMIDITY = 89.0 PC

*SIDELINE PLANE*

BOOM MICROPHONES - LOSSLESS DATA

MIC # 14 15 16 17 18

R 0. 17. 31. 43. 54.

THETA,  $\theta_s$  90. 90. 90. 90. 90.

Z 106. 98. 91. 86. 81.

DISTANCE 91. 85. 82. 83. 86.

PHI,  $\phi$  0. 11. 22. 31. 39.

INDEX FREQ

1	25.	92.0	91.8	93.0	95.8	97.3
2	32.	92.0	94.9	95.0	97.3	98.7
3	40.	93.1	94.9	94.9	97.7	99.9
4	50.	95.4	96.8	95.6	99.0	100.3
5	63.	95.0	96.5	94.8	97.5	97.9
6	80.	95.8	96.7	94.8	96.5	97.8
7	100.	94.3	94.3	93.5	95.2	97.8
8	125.	95.5	95.2	94.0	95.7	97.4
9	160.	94.0	93.4	92.6	95.7	97.3
10	200.	93.8	94.1	92.9	95.7	97.4
11	250.	92.8	93.1	92.1	95.5	96.6
12	315.	91.7	91.8	92.2	95.0	95.7
13	400.	90.9	90.7	90.8	93.6	94.1
14	500.	90.4	90.3	89.9	92.9	93.3
15	630.	88.7	89.1	88.6	91.0	92.1
16	800.	89.1	89.2	88.2	90.7	91.3
17	1000.	87.7	87.9	87.5	89.6	90.1
18	1250.	87.4	87.4	86.0	88.5	88.7
19	1600.	88.1	89.5	86.7	87.4	87.7
20	2000.	84.2	84.6	83.3	85.6	86.3
21	2500.	84.1	84.5	82.9	85.1	86.2
22	3150.	85.7	86.4	83.6	86.0	87.5
23	4000.	85.0	84.9	81.4	84.4	85.1
24	5000.	84.7	83.9	80.8	83.8	84.6
25	6300.	85.2	85.5	80.5	84.0	84.6
26	8000.	83.7	83.6	78.0	82.7	83.5
27	10000.	84.1	83.5	75.7	80.8	82.8
28	12500.	84.4	83.1	72.9	79.0	80.9
29	16000.	83.4	81.6	70.7	78.6	78.9

FOLDOUT FRAME

OASPL

105.9 106.5 105.5 108.2 109.5

ORIGINAL PAGE IS  
OF POOR QUALITY

130

FEED = 3175. RPM

PERCENT SPEED 86.0

FGK 16183

HUMIDITY = 89.0 PC

BAROMETER = 29.30 IN HG

X111 .636

FRAME

1

216

FOLDOUT FRAME

2

25.79

DATA OF 1108. SUBSET NO. 79. READINGS 127 128 129 130

QCSEE OTW ENGINE  
SDOF INLET  
FULLY SUPPRESSED ENGINE  
ENGINE WITH APPROACH FLAPS

*SPL*

LOSSLESS ARRAY

*FLYOVER PLANE* DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERIC  
(FOR POWER AND DIRECTIVITY COMPUTATION)

*ENGINE CENTERLINE MICROPHONES*

ANGLE,  $\theta$ , 60. 90.

COMPUTED GASPL 114.2 119.1

BAND FREQUENCY

1	25	106.0	109.6
2	32	107.0	113.7
3	40	106.6	110.5
4	50	104.3	111.7
5	63	102.9	108.0
6	80	104.2	107.4
7	100	101.4	105.5
8	125	98.2	102.3
9	160	94.8	99.7
10	200	93.7	97.2
11	250	93.7	97.1
12	315	93.3	98.2
13	400	93.0	98.7
14	500	92.6	96.3
15	630	91.4	94.4
16	800	91.4	94.1
17	1000	90.7	92.1
18	1250	90.0	89.9
19	1600	92.5	89.3
20	2000	88.1	87.7
21	2500	89.5	87.5
22	3150	92.5	89.8
23	4000	91.1	86.7
24	5000	92.0	85.6
25	6300	92.1	88.0
26	8000	99.7	84.6
27	10000	89.5	84.1
28	12500	97.5	86.9
29	16000	96.8	90.7

217

FOLDOUT FRAME /

129 130

CONFIGURATION NO 114  
SPEED = 3175. RPM  
PERCENT SPEED = 86.0

O S S L E S S   A R R A Y

T RADIUS WITH NO ATMOSPHERIC ATTENUATION  
ER AND DIRECTIVITY COMPUTATIONS)

217

FOLDOUT FRAME 2



DATA OF 1108. SUBSET NO. 79. READINGS 127 128 129 130

SIX DECIBELS HAVE BEEN SUBTRACTED FROM THE ORIGINAL DATA.

QCSEE OTW ENGINE

SDOF INLET

FULLY SUPPRESSED ENGINE

ENGINE WITH APPROACH FLAPS

ORIGINAL PAGE IS  
OF POOR QUALITY

*SPL* LOSSLESS ARRAY

*FLYOVER PLANE* DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERIC A  
(FOR POWER AND DIRECTIVITY COMPUTATIONS)

ANGLE *θ* 0. 30. 40. 50. 60. 70. 80. 90. 100. 140. 150.

COMPUTED CASPL 109.4 112.0 110.2 110.6 111.2 110.9 110.9 111.5 112.1 111.5 117.1 11

BAND FREQUENCY

1	25	96.5	101.5	100.3	101.3	103.0	101.1	101.6	101.0	100.4	103.5	102.0	10
2	32	98.8	102.9	101.8	102.5	104.1	101.8	101.8	101.5	102.1	103.3	107.4	10
3	40	100.4	104.8	102.6	102.6	102.3	100.9	100.6	102.9	104.9	105.3	109.1	11
4	50	101.0	104.4	102.3	101.4	99.4	101.5	101.8	103.8	105.6	104.5	111.1	11
5	63	100.1	103.4	98.5	98.0	98.9	101.6	102.0	102.9	102.8	101.4	110.1	11
6	80	99.9	100.1	94.8	96.8	100.4	101.9	100.1	100.1	101.5	97.5	109.0	11
7	100	95.0	94.9	96.9	98.8	100.0	98.8	100.0	99.3	98.4	95.0	103.1	10
8	125	95.0	96.5	98.6	98.8	97.1	97.9	98.9	98.9	99.1	93.6	100.1	10
9	160	92.1	97.0	95.6	93.9	95.5	96.0	96.9	97.6	97.1	90.5	95.8	10
10	200	90.4	94.7	91.4	94.3	94.9	95.3	95.0	96.8	96.2	93.3	94.0	10
11	250	89.5	90.5	91.5	93.8	94.7	95.3	95.7	96.2	95.5	94.9	93.0	10
12	315	88.9	91.9	90.8	92.0	93.4	93.7	94.4	93.9	92.3	91.8	90.7	10
13	400	85.7	89.9	89.2	90.4	90.3	92.1	92.1	92.3	91.8	89.7	89.6	10
14	500	85.4	87.2	87.8	88.6	91.6	92.1	92.4	91.6	89.1	85.7	88.2	9
15	630	83.3	86.2	87.0	88.3	88.8	90.7	89.8	89.2	87.7	83.6	86.7	9
16	800	84.1	86.0	86.6	89.1	89.5	90.5	89.6	89.0	89.0	85.6	87.5	9
17	1000	84.3	86.2	85.8	86.9	88.2	88.3	88.4	87.4	87.4	85.0	87.3	9
18	1250	87.7	88.2	87.4	87.2	87.7	88.0	86.7	86.0	85.2	84.1	86.8	9
19	1600	93.4	93.8	89.8	91.2	89.9	89.3	88.6	87.1	85.2	83.4	85.8	9
20	2000	88.1	87.4	86.4	86.5	87.4	86.5	85.3	84.6	83.8	80.8	84.3	9
21	2500	93.0	92.4	89.8	90.3	88.6	87.1	85.0	83.7	82.5	80.1	83.0	8
22	3150	95.5	95.9	94.5	94.6	92.5	90.1	86.6	85.5	83.4	80.1	83.0	8
23	4000	92.5	90.9	90.3	90.2	89.3	86.8	84.0	82.8	81.4	78.7	82.1	8
24	5000	92.9	91.6	90.9	91.0	90.2	87.1	83.7	83.2	80.6	76.5	81.2	8
25	6300	92.6	91.7	90.8	91.3	89.9	86.8	84.5	83.3	80.8	75.5	80.4	8
26	8000	91.2	89.6	88.8	89.7	88.7	85.2	82.8	81.7	78.9	76.3	79.0	8
27	10000	90.6	88.9	87.7	88.1	87.4	83.7	81.2	80.0	77.6	78.1	78.4	8
28	12500	89.6	87.7	85.8	86.3	86.4	82.8	81.0	80.8	80.9	80.9	81.4	9
29	16000	89.0	86.6	86.0	85.4	85.1	84.5	84.7	84.7	84.7	84.7	84.8	9

218

FOLDOUT FRAME

FROM THE ORIGINAL DATA.

CONFIGURATION NO 114  
SPEED = 3175. RPM  
PERCENT SPEED = 86.0

D S S L E S S A R R A Y

ORIGINAL PAGE IS  
OF POOR QUALITY

RADIUS WITH NO ATMOSPHERIC ATTENUATION  
R AND DIRECTIVITY COMPUTATIONS)

80. 90. 100. 140. 150. 160. 180.

0.9 111.5 112.1 111.5 117.1 121.2 120.7

1.6	101.0	100.4	103.5	102.0	108.3	106.1
1.8	101.5	102.1	103.3	107.4	109.5	109.1
0.6	102.9	104.9	105.3	109.1	111.7	111.3
1.8	103.8	105.6	104.5	111.1	115.0	113.3
2.0	102.9	102.8	101.4	110.1	114.4	112.4
0.1	100.1	101.5	97.5	109.0	111.5	110.4
0.0	99.3	98.4	95.0	103.1	109.9	109.1
8.9	98.9	99.1	93.6	100.1	108.1	108.6
6.9	97.6	97.1	90.5	95.8	105.1	107.6
5.0	96.8	96.2	93.3	94.0	104.4	107.9
5.7	96.2	95.5	94.9	93.0	102.8	106.4
4.4	93.9	92.3	91.8	90.7	100.4	105.4
2.1	92.3	91.8	89.7	89.6	100.1	103.7
2.4	91.6	89.1	85.7	88.2	97.9	101.9
9.8	89.2	87.7	83.6	86.7	97.0	100.3
9.6	89.0	89.0	85.6	87.5	95.2	99.1
8.4	87.4	87.4	85.0	87.3	94.8	97.7
6.7	86.0	85.2	84.1	86.8	93.2	96.6
8.6	87.1	85.2	83.4	85.8	91.9	95.3
5.3	84.6	83.8	80.8	84.3	90.3	93.3
5.0	83.7	82.5	80.1	83.0	89.0	92.0
5.6	85.5	83.4	80.1	83.0	88.1	90.7
4.0	82.8	81.4	78.7	82.1	86.7	89.2
3.7	83.2	80.6	76.5	81.2	85.8	87.9
4.5	83.3	80.8	75.5	80.4	84.8	86.7
3.8	81.7	78.9	76.3	79.0	85.2	85.4
1.2	80.0	77.6	78.1	78.4	87.8	87.7
1.0	80.8	80.9	80.9	81.4	90.9	90.9
1.7	84.7	84.7	84.7	84.8	94.7	94.7

218

# SPL LOSSLESS DATA AT 100 FOOT RADIUS

QCSEE OTW ENGINE

SDOF INLET

FULLY SUPPRESSED ENGINE

ORIGINAL PAGE IS  
OF POOR QUALITY

ENGINE WITH APPROACH FLAPS

READING NUMBERS = 131 132 133

CONFIGURATION NO = 114

SPEED = 3324. RPM

PE

TEMPERATURE = 34.0 F

RELATIVE HUMIDITY = 89.0 PC

## SIDELINE PLANE

BOOM MICROPHONES - LOSSLESS DATA

MIC #	14	15	16	17	18
R	0.	17.	31.	43.	54.
THETA, $\theta_s$	90.	90.	90.	90.	90.
Z	106.	98.	91.	86.	81.
DISTANCE	91.	85.	82.	83.	86.
PHI, $\phi$	0.	11.	22.	31.	39.

INDEX FREQ

1	25.	91.8	91.9	92.9	98.3	104.4
2	32.	93.5	95.0	96.1	99.7	104.5
3	40.	94.6	95.7	96.1	100.3	103.8
4	50.	97.5	98.4	97.9	100.5	102.3
5	63.	97.5	98.4	97.4	100.0	101.3
6	80.	97.8	97.4	95.8	98.5	100.7
7	100.	95.8	95.7	95.6	97.0	100.7
8	125.	96.0	96.4	94.9	98.9	101.7
9	160.	94.8	95.6	94.8	98.2	101.2
10	200.	95.8	95.6	95.4	98.5	100.5
11	250.	94.8	94.2	94.4	97.5	99.7
12	315.	93.7	93.7	93.8	97.9	99.0
13	400.	93.7	92.6	92.6	96.4	97.7
14	500.	92.3	92.3	92.5	95.9	96.5
15	630.	91.0	91.1	90.8	94.1	95.4
16	800.	91.5	91.6	90.6	93.1	94.4
17	1000.	90.1	90.3	89.3	91.9	92.9
18	1250.	89.3	89.0	88.0	90.1	91.6
19	1600.	89.8	91.1	87.4	90.2	90.5
20	2000.	86.3	86.8	85.3	87.4	88.8
21	2500.	85.9	86.0	84.5	86.9	88.1
22	3150.	87.0	86.8	84.7	87.0	88.5
23	4000.	86.2	86.3	83.0	85.4	86.9
24	5000.	86.0	85.3	81.5	84.9	86.3
25	6300.	86.3	86.2	81.2	85.0	85.5
26	8000.	84.4	84.2	78.1	82.9	84.4
27	10000.	84.9	84.1	75.8	81.4	83.4
28	12500.	84.9	83.2	72.8	79.0	80.3
29	16000.	84.0	82.1	70.3	78.1	79.2

FOLDOUT FRAME /

OASPL

107.6 107.8 107.3 110.5 113.3

ORIGINAL PAGE IS  
OF POOR QUALITY

33

SPEED = 3324. RPM

PERCENT SPEED

90.0

FEK 17708

WET HUMIDITY = 89.0 PC

BAROMETER = 29.30 IN HG

XMH .692

OUT FRAME /

219

FOLDOUT FRAME

2

S.S. 80

DATA OF 1108. SUBSET NO. 80. READINGS 131 132 133 ~~130~~

QCSEE OTW ENGINE  
SDCF INLET  
FULLY SUPPRESSED ENGINE  
ENGINE WITH APPROACH FLAPS

*SPL* LOSSLESS ARRAY

*FLYOVER PLANE* DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERIC A  
(FOR POWER AND DIRECTIVITY COMPUTATION)

*ENGINE CENTERLINE MICROPHONES*

ANGLE  $\theta_p$  60. 90.

COMPUTED OASPL 115.7 118.5

BAND FREQUENCY

1	25	106.0	107.4
2	32	108.4	109.0
3	40	107.9	110.5
4	50	106.2	111.9
5	63	104.4	111.0
6	80	106.7	107.9
7	100	104.2	104.9
8	125	101.2	103.9
9	160	98.0	100.9
10	200	95.6	98.9
11	250	95.9	98.2
12	315	95.9	100.1
13	400	95.6	99.6
14	500	95.8	98.3
15	630	94.1	96.1
16	800	94.1	95.5
17	1000	93.0	93.7
18	1250	92.1	91.4
19	1600	94.8	92.7
20	2000	89.3	89.3
21	2500	88.8	88.9
22	3150	90.3	90.1
23	4000	89.2	87.5
24	5000	90.1	86.4
25	6300	89.3	87.8
26	8000	86.8	84.0
27	10000	86.7	83.7
28	12500	86.8	87.0
29	16000	90.7	90.7

220

FOLDOUT FRAME 1

133 120

CONFIGURATION NO 114  
SPEED = 3324. RPM  
PERCENT SPEED = 90.0

SSLESS ARRAY

RADIUS WITH NO ATMOSPHERIC ATTENUATION  
AND DIRECTIVITY COMPUTATIONS)

220

FOLDOUT FRAME 2

DATA OF 1108. SUBSET NO. 80. READINGS 131 132 133 130

SIX DECIBELS HAVE BEEN SUBTRACTED FROM THE ORIGINAL DATA.  
QCSEE OTW ENGINE  
SDOF INLET  
FULLY SUPPRESSED ENGINE  
ENGINE WITH APPROACH FLAPS

*SPL* LOSSLESS ARRAY

ORIGINAL PAGE IS  
OF POOR QUALITY

*FLYOVER PLANE* DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERIC  
(FOR POWER AND DIRECTIVITY COMPUTATION)

ANGLE,  $\theta$ , 0. 30. 40. 50. 60. 70. 80. 90. 100. 140. 150.

COMPUTED OASPL 110.1 111.9 111.6 112.2 112.4 112.8 113.3 114.1 114.3 114.6 119.8

BAND FREQUENCY

1	25	98.5	102.5	102.3	101.8	101.3	103.3	104.0	102.5	103.5	107.8	104.8
2	32	97.0	102.0	103.2	103.8	103.8	103.8	103.3	104.8	103.7	108.0	109.2
3	40	101.0	104.8	104.3	105.7	104.3	103.7	102.7	104.2	105.3	106.5	112.2
4	50	102.5	104.8	103.5	102.0	100.8	102.2	105.3	107.8	107.5	107.0	112.7
5	63	101.7	101.3	100.7	99.8	100.2	103.0	103.8	104.8	107.3	104.5	113.8
6	80	99.8	98.2	96.3	99.7	103.3	103.2	102.7	102.8	103.0	102.3	111.5
7	100	96.7	95.2	97.8	100.2	102.5	101.0	101.8	102.3	100.8	95.5	107.0
8	125	96.7	96.5	99.9	101.2	99.4	101.5	101.5	101.4	100.7	98.2	104.0
9	160	94.0	98.5	96.4	96.0	98.2	97.7	99.0	100.2	99.4	94.9	99.0
10	200	91.7	96.0	93.5	96.0	97.5	97.2	98.0	98.9	98.2	94.9	97.7
11	250	91.0	92.0	93.9	95.9	97.2	96.4	97.4	97.5	97.9	91.9	96.5
12	315	90.2	93.2	92.7	94.2	95.4	96.0	96.7	96.9	95.0	92.0	94.5
13	400	87.6	91.6	91.2	92.6	92.9	94.4	95.2	94.7	94.2	89.9	93.7
14	500	86.7	88.7	89.9	91.4	93.9	94.7	95.9	93.7	91.7	88.1	92.4
15	630	86.1	87.6	89.9	91.6	91.6	93.3	92.4	91.1	90.8	86.6	90.8
16	800	85.1	87.9	89.3	90.4	91.9	92.8	92.3	91.3	90.9	86.9	91.3
17	1000	86.2	87.5	87.0	89.0	90.8	91.5	91.3	89.7	89.0	86.7	91.3
18	1250	89.4	88.4	87.9	88.6	90.1	90.1	89.6	88.1	87.1	85.6	89.7
19	1600	96.0	94.2	92.8	93.8	93.3	91.8	89.8	88.0	87.3	85.5	89.7
20	2000	87.5	86.6	86.1	86.8	89.1	88.3	87.5	86.1	85.6	82.0	87.5
21	2500	90.1	89.4	87.9	87.2	88.2	87.7	86.7	85.2	84.2	81.9	86.4
22	3150	95.1	93.1	91.9	90.4	91.1	88.8	85.6	85.1	84.1	80.9	85.9
23	4000	91.7	89.7	88.7	88.4	88.0	86.5	84.2	83.5	82.2	78.7	84.8
24	5000	92.6	91.1	89.9	89.4	88.2	86.4	83.7	83.2	81.9	77.2	84.7
25	6300	92.1	90.5	89.1	88.8	88.0	85.8	83.3	83.0	82.0	76.3	83.4
26	8000	90.1	88.2	86.5	86.7	85.9	83.4	80.9	80.4	79.0	75.8	81.2
27	10000	89.5	87.6	85.8	85.4	85.0	81.8	80.9	79.4	77.6	77.9	80.1
28	12500	88.1	85.7	83.7	83.2	83.1	80.9	81.8	80.8	80.9	80.9	81.8
29	16000	87.5	84.6	84.6	84.4	84.5	84.7	84.6	84.7	84.7	84.7	84.6

281

FOLDOUT FRAME

133 130

FROM THE ORIGINAL DATA.

CONFIGURATION NO 114

SPEED = 3324. RPM

PERCENT SPEED = 90.0

O S S L E S S A R R A Y

ORIGINAL PAGE IS  
OF POOR QUALITY

T RADIUS WITH NO ATMOSPHERIC ATTENUATION  
ER AND DIRECTIVITY COMPUTATIONS)

80. 90. 100. 140. 150. 160. 180.

13.3 114.1 114.3 114.6 119.8 123.6 123.0

104.0 102.5 103.5 107.8 104.8 108.3 106.7

103.3 104.8 103.7 108.0 109.2 112.8 110.7

102.7 104.2 105.3 106.5 112.2 113.8 113.5

105.3 107.8 107.5 107.0 112.7 116.0 115.3

103.8 104.8 107.3 104.5 113.8 116.3 115.0

102.7 102.8 103.0 102.3 111.5 116.0 112.8

101.8 102.3 100.8 95.5 107.0 112.2 110.8

101.5 101.4 100.7 98.2 104.0 110.5 111.5

99.0 100.2 99.4 94.9 99.0 108.4 109.9

98.0 98.9 98.2 94.9 97.7 107.9 110.5

97.4 97.5 97.9 91.9 96.5 106.0 109.0

96.7 96.9 95.0 92.0 94.5 104.4 107.7

95.2 94.7 94.2 89.9 93.7 103.2 106.6

95.9 93.7 91.7 88.1 92.4 100.4 104.2

92.4 91.1 90.8 86.6 90.8 99.4 102.8

92.3 91.3 90.9 86.9 91.3 98.3 101.8

91.3 89.7 89.0 86.7 91.3 97.5 100.8

89.6 88.1 87.1 85.6 89.7 96.2 99.1

89.8 88.0 87.3 85.5 89.7 95.0 97.7

87.5 86.1 85.6 82.0 87.5 93.5 95.8

86.7 85.2 84.2 81.9 86.4 92.1 94.6

85.6 85.1 84.1 80.9 85.9 91.3 92.8

84.2 83.5 82.2 78.7 84.8 89.8 91.2

83.7 83.2 81.9 77.2 84.7 89.0 89.9

83.3 83.0 82.0 76.3 83.4 88.1 88.8

80.9 80.4 79.0 75.8 81.2 85.8 86.3

80.9 79.4 77.6 77.9 80.1 87.7 87.7

81.8 80.8 80.9 80.9 81.8 90.9 90.9

84.6 84.7 84.7 84.7 84.6 94.7 94.7

281

FOLDOUT FRAME 2



# *SPL* LOSSLESS DATA AT 100 FOOT RADIUS

OCSEE OTW ENGINE

SDOF INLET

FULLY SUPPRESSED ENGINE

ORIGINAL PAGE IS  
OF POOR QUALITY

ENGINE WITH APPROACH FLAPS

READING NUMBERS = 134 135 136

CONFIGURATION NO = 114

SPEED = 2400. RPM

TEMPERATURE = 35.0 F

RELATIVE HUMIDITY = 86.0 PC

*SIDELINE PLANE*

BOOM MICROPHONES - LOSSLESS DATA

MIC #	14	15	16	17	18
R	0.	17.	31.	43.	54.
THETA, $\theta$	90.	90.	90.	90.	90.
Z	106.	98.	91.	86.	81.
DISTANCE	91.	85.	82.	83.	86.
PHI, $\phi$	0.	11.	22.	31.	39.

INDEX FREQ

1	25.	85.3	87.9	86.1	90.8	90.3
2	32.	86.6	89.5	89.8	92.5	90.5
3	40.	87.8	88.4	89.9	92.0	93.2
4	50.	90.1	89.7	90.4	93.8	93.8
5	63.	89.0	90.9	87.6	90.0	89.3
6	80.	89.8	90.4	87.8	89.7	90.0
7	100.	88.8	86.7	86.1	89.0	90.3
8	125.	87.3	86.4	85.3	88.0	89.7
9	160.	85.0	84.2	84.6	88.2	88.8
10	200.	86.0	85.4	85.3	88.2	89.2
11	250.	86.8	85.9	85.3	88.2	88.3
12	315.	84.3	83.6	83.1	86.5	86.7
13	400.	82.3	81.4	81.3	85.0	85.9
14	500.	81.2	80.4	80.6	82.4	85.2
15	630.	80.4	80.1	79.0	82.2	82.9
16	800.	81.0	79.9	78.8	81.4	82.4
17	1000.	81.2	79.5	78.8	81.3	81.9
18	1250.	83.1	80.5	79.4	81.3	82.1
19	1600.	77.7	76.1	74.8	77.0	77.7
20	2000.	77.3	75.3	74.2	76.8	77.1
21	2500.	77.4	76.1	74.2	76.6	77.7
22	3150.	77.3	75.2	73.2	75.0	76.5
23	4000.	77.3	74.8	72.3	75.1	76.5
24	5000.	78.1	74.7	71.2	74.1	75.5
25	6300.	79.4	77.3	72.4	75.7	76.2
26	8000.	80.6	78.1	72.0	75.9	77.3
27	10000.	82.1	79.5	71.9	76.9	79.0
28	12500.	82.1	79.2	69.5	75.5	77.7
29	16000.	79.6	75.4	63.9	71.2	71.7

FOLDOUT FRAME )

*222*

OASPL 99.4 99.4 98.6 101.5 101.8

ORIGINAL PAGE IS  
OF POOR QUALITY

136

SPEED = 2400. RPM

PERCENT SPEED

65.0

FGK 8883

VE HUMIDITY = 96.0 PC

BAROMETER = 29.30 IN HG

XM11 .47

T FRAME )

222

FOLDOUT FRAME

SS. 81

2

DATA OF 1108. SURSET NO. 81. READINGS 134 135 136 137

QCSEE OTW ENGINE  
SDOE INLET  
FULLY SUPPRESSED ENGINE  
ENGINE WITH APPROACH FLAPS

*SPL* LOSSLESS ARRAY

*FLYOVER PLANE* DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERIC A  
(FOR POWER AND DIRECTIVITY COMPUTATION)

*ENGINE CENTERLINE MICROPHONES*

ANGLE,  $\theta$ , 60. 90.

COMPUTED OASPL 108.0 107.4

BAND FREQUENCY

1	25	101.7	100.0
2	32	101.9	98.9
3	40	100.2	98.5
4	50	97.9	101.0
5	63	93.2	97.2
6	80	94.4	95.7
7	100	93.4	94.0
8	125	90.0	91.2
9	160	86.4	88.0
10	200	85.9	87.9
11	250	86.9	87.4
12	315	86.1	87.9
13	400	84.4	88.2
14	500	83.6	86.6
15	630	81.6	83.6
16	800	82.5	84.0
17	1000	83.8	83.0
18	1250	87.9	82.1
19	1600	82.0	78.5
20	2000	82.8	78.2
21	2500	84.8	78.6
22	3150	85.0	78.8
23	4000	85.6	77.5
24	5000	85.3	75.8
25	6300	88.3	78.9
26	8000	87.9	77.2
27	10000	91.1	79.9
28	12500	90.1	80.8
29	16000	85.5	80.5

223

FOLDOUT FRAME |

5 136 120

CONFIGURATION NO 114  
SPEED = 2400. RPM  
PERCENT SPEED = 65.0

LOSSLESS ARRAY

FT RADIUS WITH NO ATMOSPHERIC ATTENUATION  
WER AND DIRECTIVITY COMPUTATIONS)

223

FOLDOUT FRAME 2

DATA OF 1108. SUBSET NO. 81. READINGS 134 135 136 ~~130~~

SIX DECIBELS HAVE BEEN SUBTRACTED FROM THE ORIGINAL DATA.

QCSEE OTW ENGINE

SDDF INLET

FULLY SUPPRESSED ENGINE

ENGINE WITH APPROACH FLAPS

*SPL* LOSSLESS ARRAY

ORIGINAL PAGE IS  
OF POOR QUALITY

*FLYOVER PLANE* DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERIC  
(FOR POWER AND DIRECTIVITY COMPUTATION)

ANGLE, *Az* 0. 30. 40. 50. 60. 70. 80. 90. 100. 140. 150.

COMPUTED OASPL 103.4 104.4 104.7 104.2 104.0 103.3 102.3 102.8 103.4 107.5 108.0

BAND FREQUENCY

1	25	92.8	94.3	97.2	96.8	97.3	97.3	95.8	97.0	95.5	99.0	98.7
2	32	92.2	96.0	97.5	96.7	97.2	96.2	94.7	94.5	95.3	100.8	101.8
3	40	92.8	96.2	95.2	96.0	94.0	93.0	90.5	93.0	95.3	102.0	101.0
4	50	92.2	95.3	94.8	93.2	91.8	92.2	91.8	94.0	95.7	100.5	99.8
5	63	91.7	91.7	92.3	88.7	89.0	91.2	92.0	91.3	91.5	93.5	99.3
6	80	91.0	88.8	86.5	88.3	92.3	91.8	90.8	89.5	90.2	93.2	96.7
7	100	89.3	88.3	89.2	90.3	91.2	89.7	89.5	89.2	89.5	90.5	92.7
8	125	84.9	87.5	89.0	89.7	87.4	88.7	88.4	88.9	89.9	87.9	89.7
9	160	84.0	88.2	87.4	84.9	86.4	87.4	87.2	86.9	88.4	88.3	86.5
10	200	86.5	87.0	85.0	86.9	86.5	87.0	86.2	86.9	87.5	86.4	85.0
11	250	83.0	84.2	84.0	85.4	86.4	86.0	86.9	87.2	89.4	85.0	85.2
12	315	81.7	83.4	83.0	83.9	84.5	84.2	84.7	84.0	85.2	82.5	82.7
13	400	77.9	81.4	80.9	81.6	80.7	82.2	82.2	82.6	83.9	80.2	81.1
14	500	75.7	77.9	78.2	79.6	81.6	81.4	81.9	81.4	81.2	79.1	79.9
15	630	74.9	77.8	77.8	79.1	78.9	80.4	79.1	79.4	78.6	76.1	78.3
16	800	79.1	79.0	78.8	79.5	80.0	79.6	79.3	79.5	78.8	77.6	79.3
17	1000	86.7	84.8	82.0	81.5	81.7	79.7	78.8	78.5	78.8	78.5	80.2
18	1250	91.7	89.6	86.2	85.7	84.9	81.7	78.6	78.2	77.9	78.9	80.6
19	1600	86.8	85.2	84.2	81.8	79.8	78.3	76.7	76.0	75.2	74.1	76.5
20	2000	87.2	85.5	84.5	83.0	81.2	78.5	76.2	75.3	74.6	72.8	75.1
21	2500	87.7	87.7	85.9	83.9	82.7	79.9	76.9	76.1	74.1	71.9	74.4
22	3150	87.1	86.6	85.6	84.3	83.3	79.6	75.9	74.3	73.3	71.4	74.6
23	4000	87.2	86.0	85.5	84.4	83.2	80.2	75.9	73.9	72.0	71.4	74.5
24	5000	86.8	86.3	85.4	83.8	82.9	79.4	74.8	72.9	71.6	72.1	75.1
25	6300	89.5	87.6	87.3	86.5	85.3	81.9	76.9	74.4	71.9	73.4	74.3
26	8000	92.5	90.3	90.5	88.5	86.9	81.3	78.5	75.4	71.2	75.3	73.7
27	10000	90.0	90.9	92.4	92.2	89.0	85.1	81.9	76.8	72.6	77.8	73.7
28	12500	87.8	88.2	89.5	89.0	88.1	83.7	80.7	76.8	71.0	81.0	72.4
29	16000	86.7	84.0	84.9	84.3	83.6	79.1	75.9	74.3	74.9	84.9	75.2

224

FOLDOUT FRAME

FROM THE ORIGINAL DATA.

CONFIGURATION NO 114  
SPEED = 2400. RPM  
PERCENT SPEED = 65.0

D S S L E S S A R R A Y

RADIUS WITH NO ATMOSPHERIC ATTENUATION  
R AND DIRECTIVITY COMPUTATIONS)

ORIGINAL PAGE IS  
OF POOR QUALITY

80. 90. 100. 140. 150. 160. 180.

2.3 102.8 103.4 107.5 108.0 111.7 111.0

5.8	97.0	95.5	99.0	98.7	103.2	103.5
4.7	94.5	95.3	100.8	101.8	104.3	102.8
0.5	93.0	95.3	102.0	101.0	103.5	103.0
1.8	94.0	95.7	100.5	99.8	105.0	101.5
2.0	91.3	91.5	93.5	99.3	102.2	101.5
0.8	89.5	90.2	93.2	96.7	101.3	99.2
9.5	89.2	89.5	90.5	92.7	97.3	98.7
8.4	88.9	89.9	87.9	89.7	95.0	96.4
7.2	86.9	88.4	88.3	86.5	91.7	96.0
6.2	86.9	87.5	86.4	85.0	91.7	95.5
6.9	87.2	89.4	85.0	85.2	90.0	94.5
4.7	84.0	85.2	82.5	82.7	87.7	92.9
2.2	82.6	83.9	80.2	81.1	87.9	90.9
1.9	81.4	81.2	79.1	79.9	84.7	89.2
9.1	79.4	78.6	76.1	78.3	84.3	87.6
9.3	79.5	78.8	77.6	79.3	84.0	86.8
8.8	78.5	78.8	78.5	80.2	83.3	86.2
8.6	78.2	77.9	78.9	80.6	82.9	84.9
6.7	76.0	75.2	74.1	76.5	79.8	83.0
6.2	75.3	74.6	72.8	75.1	78.6	81.3
6.9	76.1	74.1	71.9	74.4	77.4	80.2
5.9	74.3	73.3	71.4	74.6	76.6	78.9
5.9	73.9	72.0	71.4	74.5	75.5	77.9
4.8	72.9	71.6	72.1	75.1	75.8	76.9
6.9	74.4	71.9	73.4	74.3	75.9	76.9
8.5	75.4	71.2	75.3	73.7	75.4	76.2
1.9	76.8	72.6	77.8	73.7	77.8	78.1
0.7	76.8	71.0	81.0	72.4	81.0	81.0
5.9	74.3	74.9	84.9	75.2	84.9	84.9

224

# *SPL* LOSSLESS DATA AT 100 FOOT RADIUS

QCSEE OTW ENGINE

BELLMOUTH HARDWALL INLET

HARD CORE, NO SPLITTER

ORIGINAL PAGE IS  
OF POOR QUALITY

ENGINE WITH APPROACH FLAPS

READING NUMBERS = 137 138 146

CONFIGURATION NO = 100

SPEED = 1848. RPM

TEMPERATURE = 34.0 F

RELATIVE HUMIDITY = 75.0 PC

*SIDELINE PLANE*

BOOM MICROPHONES - LOSSLESS DATA

MIC # 14 15 16 17 18

R 0. 17. 31. 43. 54.

THETA,  $\theta_s$  90. 90. 90. 90. 90.

Z 106. 98. 91. 86. 81.

DISTANCE 91. 85. 82. 83. 86.

PHI,  $\phi$  0. 11. 22. 31. 39.

INDEX FREQ

1	25.	81.3	79.5	80.6	83.3	84.3
2	32.	81.0	82.5	82.9	83.8	85.2
3	40.	80.8	82.4	82.6	83.2	84.5
4	50.	82.5	84.0	85.4	88.3	89.0
5	63.	84.5	84.1	82.6	84.7	83.3
6	80.	82.1	82.7	81.8	82.5	81.3
7	100.	82.3	81.1	79.3	81.4	84.0
8	125.	79.7	79.2	79.6	81.0	81.2
9	160.	78.7	78.6	77.8	79.5	81.5
10	200.	80.3	80.2	79.8	81.2	82.0
11	250.	82.5	80.7	78.8	81.2	81.2
12	315.	80.3	77.6	77.4	79.2	79.7
13	400.	77.8	76.7	75.8	77.0	77.7
14	500.	76.9	75.8	74.6	75.9	76.4
15	630.	78.5	76.3	74.0	75.2	75.5
16	800.	79.7	78.0	76.0	76.4	77.2
17	1000.	78.9	76.8	74.7	75.3	75.3
18	1250.	78.0	76.4	73.4	74.5	74.0
19	1600.	75.0	73.4	71.3	72.2	72.2
20	2000.	74.2	71.7	69.9	71.3	71.1
21	2500.	73.8	71.2	69.2	70.8	70.6
22	3150.	72.6	69.5	66.8	68.6	68.4
23	4000.	73.2	69.7	67.7	69.1	68.8
24	5000.	74.5	70.8	66.8	69.2	68.4
25	6300.	78.5	75.1	70.2	72.9	71.6
26	8000.	76.8	74.3	68.7	72.9	72.0
27	10000.	79.1	75.6	67.7	73.1	72.7
28	12500.	85.4	80.5	68.4	74.6	72.7
29	16000.	79.2	74.7	63.0	68.8	67.6

FOLDOUT FRAME 1

OASPL 94.7 93.6 92.8 94.6 95.2

ORIGINAL PAGE IS  
OF POOR QUALITY

46

SPEED = 1848. RPM

PERCENT SPEED

47.0

FBK

5082

WET HUMIDITY = 75.0 PC

BAROMETER = 29.18 IN HG

XMH

.217

S.S. 82

OUT FRAME 1

FOLDOUT FRAME

2

225



DATA OF 1201. SUBSET NO. 82. READINGS 137 138 146

QCSEE OTW ENGINE  
BELLMOUTH HARDWALL INLET  
HARD CORE, NO SPLITTER  
ENGINE WITH APPROACH FLAPS

*SPL* LOSSLESS ARRAY

*FLYOVER PLANE*

DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERIC  
(FOR POWER AND DIRECTIVITY COMPUTATION)

*ENGINE CENTERLINE MICROPHONES*

ANGLE,  $\theta$  60. 90.

COMPUTED OASPL 103.9 100.3

BAND FREQUENCY

1	25	97.0	94.7
2	32	94.5	91.4
3	40	93.4	91.2
4	50	91.0	93.5
5	63	90.2	89.7
6	80	88.4	86.5
7	100	86.7	86.0
8	125	82.9	82.5
9	160	80.7	80.2
10	200	81.9	81.2
11	250	82.2	80.2
12	315	81.1	80.4
13	400	80.4	79.2
14	500	78.4	78.1
15	630	76.9	76.6
16	800	83.0	78.6
17	1000	82.5	77.7
18	1250	82.9	74.9
19	1600	85.9	73.1
20	2000	85.8	72.1
21	2500	85.4	72.6
22	3150	82.0	71.2
23	4000	81.2	73.9
24	5000	81.8	69.0
25	6300	87.3	72.0
26	8000	90.2	71.6
27	10000	97.4	73.5
28	12500	86.5	72.7
29	16000	85.9	70.1

226

FOLDOUT FRAME |

146

CONFIGURATION NO 100  
SPEED = 1848. RPM  
PERCENT SPEED = 47.0

O S S L E S S   A R R A Y

T RADIUS WITH NO ATMOSPHERIC ATTENUATION  
ER AND DIRECTIVITY COMPUTATIONS)

226

FOLDOUT FRAME

DATA OF 1201. SUBSET NO. 82. READINGS 137 138 146

SIX DECIBELS HAVE BEEN SUBTRACTED FROM THE ORIGINAL DATA.  
 QCSEE OTW ENGINE.  
 BELLMOUTH HARDWALL INLET  
 HARD CORE, NO SPLITTER  
 ENGINE WITH APPROACH FLAPS

ORIGINAL PAGE IS  
 OF POOR QUALITY

*SPL* LOSSLESS ARRAY

*FLYOVER PLANE* DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERIC  
 (FOR POWER AND DIRECTIVITY COMPUTATION)

ANGLE <i>θ</i>		0.	30.	40.	50.	60.	70.	80.	90.	100.	140.	150.
COMPUTED OASPL		103.6	101.5	100.3	99.1	99.5	95.9	95.1	94.3	94.6	98.3	100.0
BAND FREQUENCY												
1	25	84.5	87.7	90.5	90.8	91.2	88.3	89.0	87.7	85.3	91.8	92.7
2	32	85.2	88.5	90.8	88.7	89.3	88.2	86.2	86.0	85.5	91.8	93.5
3	40	83.3	87.0	89.0	88.0	86.5	83.8	84.2	83.5	84.2	89.2	91.8
4	50	85.3	88.7	88.5	87.5	86.5	84.8	85.5	85.8	87.7	90.3	91.5
5	63	84.8	85.5	84.2	83.8	84.5	84.2	85.2	83.3	84.7	87.0	89.7
6	80	84.3	83.8	81.5	81.2	82.7	83.5	82.5	81.2	83.3	85.3	87.3
7	100	84.3	83.3	84.3	82.7	83.8	82.5	83.2	81.7	81.7	82.0	84.0
8	125	83.0	82.2	82.7	82.2	80.4	80.4	80.2	79.4	80.9	80.5	82.4
9	160	79.7	81.5	81.2	78.0	79.0	78.9	78.9	79.0	78.7	77.2	79.7
10	200	88.4	82.0	82.7	80.5	79.5	80.0	81.4	79.0	80.7	81.2	82.0
11	250	83.5	81.4	79.0	80.2	79.2	79.4	79.0	80.0	80.9	79.7	80.5
12	315	79.2	79.9	77.5	77.2	77.7	76.9	77.0	76.7	77.5	76.0	78.0
13	400	76.9	76.9	75.6	75.2	75.2	74.2	74.7	74.6	75.9	77.1	76.9
14	500	76.4	75.6	75.1	74.6	74.6	74.6	72.9	72.7	73.2	74.4	75.9
15	630	76.8	76.9	76.3	75.8	73.8	73.4	71.8	72.4	71.8	72.8	74.1
16	800	85.6	85.0	86.0	83.1	79.0	76.3	73.5	74.0	74.0	77.0	78.1
17	1000	85.0	84.8	85.2	83.2	79.2	75.7	72.8	72.7	73.0	77.5	80.0
18	1250	83.4	84.9	82.9	80.8	79.1	74.9	71.8	71.6	70.8	76.8	78.8
19	1600	85.2	86.9	85.6	83.9	82.1	76.7	71.7	70.7	70.4	73.2	75.9
20	2000	82.6	85.9	85.2	83.6	82.1	77.1	71.2	69.6	69.1	70.6	72.6
21	2500	81.4	85.5	84.9	84.9	83.2	77.5	71.0	69.2	68.5	70.5	73.4
22	3150	80.3	83.1	82.0	81.5	79.6	74.1	67.8	66.6	66.5	67.8	72.5
23	4000	80.4	83.2	81.3	81.7	78.8	73.3	67.2	66.7	67.2	69.4	74.4
24	5000	80.9	84.5	81.3	81.4	79.1	73.9	66.4	65.7	65.7	71.1	74.5
25	6300	100.4	90.0	85.8	85.6	83.5	78.2	70.2	67.6	67.5	74.0	76.1
26	8000	96.7	94.3	89.6	87.3	89.0	80.8	72.1	67.5	68.0	72.1	73.2
27	10000	85.5	93.1	90.3	88.7	93.5	84.4	73.7	69.3	68.3	71.2	72.6
28	12500	87.9	87.4	95.1	84.9	83.0	77.9	68.5	67.8	68.5	76.2	79.6
29	16000	90.3	89.4	85.8	83.5	82.0	73.1	64.8	64.0	64.7	74.1	76.2

FROM THE ORIGINAL DATA.

CONFIGURATION NO 100

SPEED = 1848. RPM

PERCENT SPEED = 47.0

O S S L E S S   A R R A Y

T RADIUS WITH NO ATMOSPHERIC ATTENUATION  
ER AND DIRECTIVITY COMPUTATIONS)ORIGINAL PAGE IS  
OF POOR QUALITY

80. 90. 100. 140. 150. 160. 180.

95.1 94.3 94.6 98.3 100.0 101.1 101.2

99.0	87.7	85.3	91.8	92.7	95.7	94.5
86.2	86.0	85.5	91.8	93.5	93.2	94.2
84.2	83.5	84.2	89.2	91.8	92.0	91.0
95.5	85.8	87.7	90.3	91.5	91.7	90.7
95.2	83.3	84.7	87.0	89.7	91.7	91.8
82.5	81.2	83.3	85.3	87.3	88.5	90.3
93.2	81.7	81.7	82.0	84.0	86.5	88.5
80.2	79.4	80.9	80.5	82.4	84.9	86.4
78.9	79.0	78.7	77.2	79.7	82.0	84.7
81.4	79.0	80.7	81.2	82.0	84.0	83.9
79.0	80.0	80.9	79.7	80.5	81.5	82.5
77.0	76.7	77.5	76.0	78.0	78.4	80.7
74.7	74.6	75.9	77.1	76.9	77.9	79.2
72.9	72.7	73.2	74.4	75.9	76.4	76.9
71.8	72.4	71.8	72.8	74.1	75.8	76.9
73.5	74.0	74.0	77.0	78.1	77.3	76.5
72.8	72.7	73.0	77.5	80.0	77.7	75.7
71.8	71.6	70.8	76.8	78.8	77.3	74.3
71.7	70.7	70.4	73.2	75.9	74.5	72.2
71.2	69.6	69.1	70.6	72.6	73.1	71.1
71.0	69.2	68.5	70.5	73.4	72.2	70.7
70.8	66.6	66.5	67.8	72.5	70.5	69.2
70.2	66.7	67.2	69.4	74.4	70.2	69.0
66.4	65.7	65.7	71.1	74.5	71.6	70.8
70.2	67.6	67.5	74.0	76.1	75.3	73.5
72.1	67.5	68.0	72.1	73.2	73.3	72.0
73.7	69.3	68.3	71.2	72.6	72.5	73.9
78.5	67.8	68.5	76.2	79.6	77.2	82.4
74.8	64.0	64.7	74.1	76.2	74.6	80.7

227

FOLDOUT FRAME 2

# SPL LOSSLESS DATA AT 100 FOOT RADIUS

QCSEE OTW ENGINE

ORIGINAL PAGE IS  
OF POOR QUALITY.

BELLMOUTH HARDWALL INLET

HARD CORE, NO SPLITTER

ENGINE WITH APPROACH FLAPS

READING NUMBERS = 147 148 149

CONFIGURATION NO = 100

SPEED = 2397. RPM

PE

TEMPERATURE = 34.0 F

RELATIVE HUMIDITY = 72.0 PC

*SIDELINE PLANE*

BOOM MICROPHONES - LOSSLESS DATA

MIC # 14 15 16 17 18

R 0. 17. 31. 43. 54.

THETA,  $\theta_s$  90. 90. 90. 90. 90.

Z 106. 98. 91. 86. 81.

DISTANCE 91. 85. 82. 83. 86.

PHI,  $\phi$  0. 11. 22. 31. 39.

INDEX FREQ

1	25.	87.1	86.7	87.4	91.0	92.7
2	32.	90.3	87.0	86.9	94.5	92.7
3	40.	87.6	89.0	87.6	91.8	92.5
4	50.	90.1	90.0	90.6	93.8	94.2
5	63.	89.6	89.2	88.8	90.5	89.2
6	80.	90.0	90.1	88.9	90.2	89.3
7	100.	87.1	87.6	85.9	88.7	91.0
8	125.	87.3	87.2	85.9	88.9	89.2
9	160.	85.5	85.4	84.6	88.5	89.7
10	200.	86.8	85.7	86.3	88.4	89.0
11	250.	88.3	87.7	86.3	88.7	88.8
12	315.	85.8	84.1	84.3	87.4	86.7
13	400.	84.0	83.4	82.6	85.2	86.0
14	500.	83.2	82.1	82.0	84.1	84.2
15	630.	82.4	81.1	80.1	82.4	82.7
16	800.	82.6	80.8	79.7	81.9	82.4
17	1000.	82.4	80.3	79.0	81.3	81.4
18	1250.	82.8	80.7	78.7	80.7	80.5
19	1600.	79.2	77.1	75.5	77.4	77.2
20	2000.	78.7	76.7	75.4	76.8	77.2
21	2500.	79.2	77.1	75.2	77.0	77.3
22	3150.	78.6	75.8	73.5	75.8	75.6
23	4000.	78.2	75.6	72.6	75.2	74.8
24	5000.	78.9	75.3	71.6	74.4	74.1
25	6300.	80.3	77.0	72.3	75.2	74.5
26	8000.	82.3	78.3	71.8	76.6	75.2
27	10000.	83.3	79.6	71.6	77.1	76.3
28	12500.	85.4	80.0	69.2	75.9	75.4
29	16000.	83.8	77.0	66.2	72.9	71.9

FOLDOUT FRAME /

228

OA SPL 100.3 99.4 98.7 102.0 102.2

ORIGINAL PAGE IS  
OF POOR QUALITY

49

SPEED = 2397. RPM

PERCENT SPEED 65.0

FGK 8637

E HUMIDITY = 72.0 PC

BAROMETER = 29.17 IN HG

XMH .289

S.S. 83

UT. FRAME 1

228

FOLDOUT FRAME 2

DATA OF 1201. SUBSET NO. 83. READINGS 147 148 149

QCSEE OTW ENGINE  
BELLMOUTH HARDWALL INLET  
HARD CORE, NO SPLITTER  
ENGINE WITH APPROACH FLAPS

SPL LOSSLESS ARRAY

FLYOVER PLANE DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERIC A  
(FOR POWER AND DIRECTIVITY COMPUTATION)

ENGINE CENTERLINE MICROPHONES

ANGLE,  $\theta$  60. 90.

COMPUTED OASPL 109.7 107.1

BAND FREQUENCY

1	25	102.9	100.4
2	32	102.7	100.0
3	40	100.9	97.5
4	50	98.5	99.5
5	63	94.5	95.7
6	80	96.0	94.9
7	100	95.4	93.9
8	125	91.7	92.2
9	160	88.3	88.7
10	200	89.7	88.2
11	250	89.7	87.6
12	315	87.7	87.6
13	400	86.7	87.4
14	500	85.1	86.3
15	630	83.8	84.4
16	800	85.3	83.6
17	1000	88.0	83.0
18	1250	91.3	82.6
19	1600	88.1	78.1
20	2000	90.5	78.8
21	2500	91.9	79.8
22	3150	89.6	78.6
23	4000	89.1	77.3
24	5000	89.5	75.6
25	6300	91.1	76.6
26	8000	88.7	76.1
27	10000	96.9	79.1
28	12500	95.4	77.2
29	16000	93.4	80.4

229

FOLDOUT FRAME /

149

CONFIGURATION NO 100  
SPEED = 2397. RPM  
PERCENT SPEED = 65.0

LOSSLESS ARRAY

FT RADIUS WITH NO ATMOSPHERIC ATTENUATION  
(R AND DIRECTIVITY COMPUTATIONS)

229

FOLDOUT FRAME 2



DATA OF 1201. SUBSET NO. 83. READINGS 147 148 149

SIX DECIBELS HAVE BEEN SUBTRACTED FROM THE ORIGINAL DATA.  
QCSEE OTW ENGINE  
BELLMOUTH HARDWALL INLET  
HARD CORE, NO SPLITTER  
ENGINE WITH APPROACH FLAPS

SPL LOSSLESS ARRAY

FLYOVER PLANE

DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERIC A  
(FOR POWER AND DIRECTIVITY COMPUTATION)

ANGLE,  $\theta$  0. 30. 40. 50. 60. 70. 80. 90. 100. 140. 150.

COMPUTED OASPL 102.6 105.1 105.0 104.4 104.6 103.2 101.7 102.1 103.2 106.3 110.4

BAND FREQUENCY

1	25	90.3	94.2	95.7	95.8	98.5	95.8	95.5	94.7	94.8	97.7	100.2
2	32	91.3	94.8	94.3	96.5	97.5	96.7	92.3	91.7	96.0	101.2	102.3
3	40	92.2	95.3	95.5	95.3	94.2	92.8	91.3	94.3	95.2	99.2	104.3
4	50	92.0	92.8	94.0	93.2	90.3	91.0	92.3	93.8	95.2	97.7	104.3
5	63	90.5	91.3	90.8	89.3	90.0	91.3	92.3	91.5	91.5	94.5	100.2
6	80	91.0	89.5	87.8	88.3	91.0	90.8	89.0	91.2	91.3	91.5	98.7
7	100	88.2	87.0	90.8	89.2	89.7	88.8	88.8	88.2	89.3	89.3	95.5
8	125	85.7	87.7	89.7	89.5	87.2	88.5	86.7	86.5	89.0	87.5	91.5
9	160	84.2	88.0	88.4	86.2	86.0	87.4	86.2	87.0	87.5	85.9	89.5
10	200	85.7	87.7	86.2	86.7	86.2	87.4	87.0	87.4	87.5	87.5	88.9
11	250	87.4	84.2	87.4	85.4	86.0	87.4	85.7	87.0	88.2	90.0	88.7
12	315	83.9	84.4	85.0	83.5	84.9	85.0	84.0	83.7	84.4	84.4	86.4
13	400	81.1	82.6	83.1	81.9	81.7	81.9	82.7	83.1	83.2	84.6	85.2
14	500	78.7	79.6	80.6	80.4	80.6	81.2	81.1	80.4	80.6	82.9	83.1
15	630	78.6	79.8	80.4	79.8	79.3	80.1	78.8	80.1	78.8	79.4	81.4
16	800	80.5	80.6	81.1	80.1	80.1	79.3	78.1	79.5	79.6	80.6	83.0
17	1000	84.0	86.5	85.4	85.4	83.7	80.5	79.4	78.8	78.3	81.7	84.0
18	1250	86.9	90.3	88.9	88.8	86.9	82.6	79.6	78.1	78.3	82.1	84.6
19	1600	86.1	88.4	86.6	85.2	84.2	79.7	76.9	75.4	74.7	77.2	81.2
20	2000	85.3	88.4	87.6	87.3	86.9	82.6	77.1	75.3	74.6	75.4	78.6
21	2500	86.1	88.6	89.2	89.1	88.6	85.2	78.9	76.4	75.2	75.7	78.6
22	3150	84.0	87.0	87.4	88.0	86.5	82.0	76.0	73.7	73.0	74.2	78.1
23	4000	82.8	86.6	86.1	86.9	85.6	81.4	75.1	72.6	71.9	74.1	77.9
24	5000	83.0	86.3	85.3	85.8	85.1	80.8	72.3	71.6	70.8	74.8	78.5
25	6300	87.6	88.7	88.7	85.4	85.9	80.4	72.3	71.0	70.6	75.3	78.3
26	8000	92.9	93.0	89.7	86.0	85.3	81.2	72.6	69.9	69.8	76.9	79.3
27	10000	90.2	96.4	95.0	92.5	90.5	87.5	76.0	73.0	71.2	77.6	80.1
28	12500	86.5	94.0	93.0	90.7	90.7	86.5	75.6	72.8	71.4	74.6	79.7
29	16000	87.4	91.0	91.0	87.8	87.8	82.2	74.3	74.3	74.9	76.5	81.0

230

FOLDOUT FRAME

FROM THE ORIGINAL DATA.

CONFIGURATION NO 100

SPEED = 2397. RPM

PERCENT SPEED = 65.0

LOSSLESS ARRAY

ORIGINAL PAGE IS  
OF POOR QUALITYRADIUS WITH NO ATMOSPHERIC ATTENUATION  
(AND DIRECTIVITY COMPUTATIONS)

80. 90. 100. 140. 150. 160. 180.

101.7 102.1 103.2 106.3 110.4 114.3 108.7

95.5	94.7	94.8	97.7	100.2	103.8	99.3
92.3	91.7	96.0	101.2	102.3	111.0	101.5
91.3	94.3	95.2	99.2	104.3	105.0	100.8
92.3	93.8	95.2	97.7	104.3	105.0	99.5
92.3	91.5	91.5	94.5	100.2	103.5	97.8
89.0	91.2	91.3	91.5	98.7	102.0	98.2
88.8	88.2	89.3	89.3	95.5	97.7	96.3
86.7	86.5	89.0	87.5	91.5	96.5	95.0
86.2	87.0	87.5	85.9	89.5	93.7	94.0
87.0	87.4	87.5	87.5	88.9	93.0	93.0
85.7	87.0	88.2	90.0	88.7	90.5	91.5
84.0	83.7	84.4	84.4	86.4	88.4	89.9
82.7	83.1	83.2	84.6	85.2	87.9	88.2
81.1	80.4	80.6	82.9	83.1	85.7	86.2
78.8	80.1	78.8	79.4	81.4	84.9	85.3
78.1	79.5	79.6	80.6	83.0	84.5	85.0
79.4	78.8	78.3	81.7	84.0	83.8	83.8
79.6	78.1	78.3	82.1	84.6	83.4	82.6
76.9	75.4	74.7	77.2	81.2	81.2	80.4
77.1	75.3	74.6	75.4	78.6	79.8	79.4
78.9	76.4	75.2	75.7	78.6	79.4	79.2
76.0	73.7	73.0	74.2	78.1	77.5	77.0
75.1	72.6	71.9	74.1	77.9	76.8	76.4
72.3	71.6	70.8	74.8	78.5	77.2	77.3
72.3	71.0	70.6	75.3	78.3	78.1	76.3
72.6	69.9	69.8	76.9	79.3	78.7	77.4
76.0	73.0	71.2	77.6	80.1	78.9	81.7
75.6	72.8	71.4	74.6	79.7	81.3	81.5
74.3	74.3	74.9	76.5	81.0	84.4	84.4

230

FOLDOUT FRAME 2

SPL

## LOSSLESS DATA AT 100 FOOT RADIUS

QCSEE OTW ENGINE

BELLMOUTH HARDWALL INLET

ORIGINAL PAGE IS  
OF POOR QUALITY

HARD CORE, NC SPLITTER

ENGINE WITH APPROACH FLAPS

READING NUMBERS = 150 151 152

CONFIGURATION NO = 100

SPEED = 2988. RPM

PE

TEMPERATURE = 36.0 F

RELATIVE HUMIDITY = 68.0 PC

SIDELINE PLANE

BOOM MICROPHONES - LOSSLESS DATA

MIC # 14 15 16 17 18

R 0. 17. 31. 43. 54.

THETA,  $\theta_s$  90. 90. 90. 90. 90.

Z 106. 98. 91. 86. 81.

DISTANCE 91. 85. 82. 83. 86.

PHI,  $\phi$  0. 11. 22. 31. 39.

INDEX FREQ

1	25.	90.6	92.7	92.3	95.7	96.7
2	32.	92.6	94.8	95.1	97.0	98.0
3	40.	93.0	94.7	94.8	95.2	96.7
4	50.	97.3	96.4	95.4	98.2	100.5
5	63.	96.3	95.4	94.1	95.7	95.7
6	80.	94.3	95.4	93.6	96.0	96.2
7	100.	94.1	92.6	92.9	94.2	96.2
8	125.	93.7	93.2	92.8	94.5	96.5
9	160.	91.8	92.1	92.4	94.4	95.7
10	200.	92.8	91.6	92.1	94.7	96.2
11	250.	92.3	92.1	91.4	93.5	95.2
12	315.	91.2	89.9	90.6	92.7	93.5
13	400.	91.2	89.4	89.5	91.2	92.4
14	500.	90.2	89.3	88.6	91.2	91.4
15	630.	88.5	87.4	87.6	89.1	89.9
16	800.	89.4	87.6	87.0	88.4	89.7
17	1000.	87.6	85.8	85.7	87.4	88.1
18	1250.	87.8	86.2	85.7	87.2	87.3
19	1600.	87.4	86.6	85.3	86.7	86.5
20	2000.	83.5	82.2	81.4	83.3	83.8
21	2500.	83.5	82.4	80.7	83.0	83.5
22	3150.	84.3	82.7	80.8	83.1	83.4
23	4000.	84.4	81.9	79.4	81.8	81.8
24	5000.	84.4	81.3	77.6	80.6	80.4
25	6300.	84.6	82.0	77.6	80.9	80.6
26	8000.	83.6	80.1	75.1	79.6	79.1
27	10000.	86.0	81.7	73.6	79.3	78.8
28	12500.	86.7	81.6	71.5	77.4	76.6
29	16000.	87.1	81.4	70.5	76.7	75.8

FOLDOUT FRAME 1

OASPL

105.7 105.3 104.8 106.9 108.1

ORIGINAL PAGE IS  
OF POOR QUALITY

152

SPEED = 2988. RPM

PERCENT SPEED 81.0

FGK 13946

VE HUMIDITY = 68.0 PC

BAROMETER = 29.15 IN HG

X1711 .374

S.S. 84

FRAME 1

FOLDOUT FRAME 2

231

DATA OF 1201. SUBSET NO. 84. READINGS 150 151 152.

QCSEE OTW ENGINE  
BELLMOUTH HARDWALL INLET  
HARD CORE, NO SPLITTER  
ENGINE WITH APPROACH FLAPS

SPL LOSSLESS ARRAY

FLYOVER PLANE DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERIC  
(FOR POWER AND DIRECTIVITY COMPUTATION)

ENGINE CENTERLINE MICROPHONES

ANGLE,  $\theta_F$  60. 90.

COMPUTED OASPL 114.2 116.9

BAND FREQUENCY

1	25	105.9	110.7
2	32	107.0	107.3
3	40	107.4	108.9
4	50	103.4	109.2
5	63	102.4	106.5
6	80	103.4	106.0
7	100	101.5	105.0
8	125	97.5	100.5
9	160	95.2	97.5
10	200	93.4	96.1
11	250	93.4	94.9
12	315	92.7	95.4
13	400	91.6	96.2
14	500	91.4	94.9
15	630	90.1	92.5
16	800	90.3	92.3
17	1000	89.2	89.9
18	1250	94.3	88.5
19	1600	97.9	87.1
20	2000	89.6	85.1
21	2500	92.0	85.1
22	3150	93.4	86.1
23	4000	92.4	84.7
24	5000	92.5	82.0
25	6300	94.1	82.9
26	8000	90.3	82.1
27	10000	91.5	84.7
28	12500	89.5	87.6
29	16000	90.5	90.8

232

FOLDOUT FRAME |

152.

CONFIGURATION NO 100  
SPEED = 2988. RPM  
PERCENT SPEED = 81.0

MISSILE ARRAY

RADIUS WITH NO ATMOSPHERIC ATTENUATION  
(AND DIRECTIVITY COMPUTATIONS)

232

FOLDOUT FRAME 2

DATA OF 1201. SUBSET NO. 84. READINGS 150 151 152

SIX DECIBELS HAVE BEEN SUBTRACTED FROM THE ORIGINAL DATA.

QC SEE OTW ENGINE

BELLMOUTH HARDWALL INLET

HARD CORE, NO SPLITTER

ENGINE WITH APPROACH FLAPS

ORIGINAL PAGE IS  
OF POOR QUALITY

SPL LOSSLESS ARRAY

*Flyover Plane* DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERIC  
(FOR POWER AND DIRECTIVITY COMPUTATI

ANGLE 0. 30. 40. 50. 60. 70. 80. 90. 100. 140. 150.

COMPUTED OASPL 106.3 111.0 109.3 110.0 109.9 108.8 110.5 109.4 109.9 111.3 119.0

BAND FREQUENCY

1	25	94.7	99.0	98.8	99.8	102.5	99.3	102.7	100.5	101.8	99.0	103.5
2	32	95.2	104.8	100.2	103.5	101.3	100.8	101.7	99.7	99.7	103.5	109.0
3	40	96.5	102.8	102.0	102.2	101.0	98.3	102.8	99.8	100.7	105.2	111.7
4	50	99.0	103.5	100.0	99.5	98.0	98.2	101.5	102.2	103.2	105.3	113.0
5	63	97.2	100.7	98.0	96.3	96.8	100.2	100.5	99.3	99.8	102.5	111.3
6	80	95.8	97.7	93.8	95.7	98.5	99.0	99.7	98.2	98.5	98.8	109.7
7	100	93.2	93.3	95.5	97.0	98.7	96.2	97.5	96.5	96.7	94.2	107.3
8	125	92.7	93.5	96.5	96.7	95.0	96.2	97.0	96.2	97.0	93.2	104.5
9	160	90.5	95.4	94.9	92.2	93.5	93.5	94.4	95.0	95.2	91.0	99.9
10	200	87.9	93.4	90.9	91.5	92.9	92.5	94.0	95.2	94.2	91.0	99.2
11	250	88.4	89.4	90.5	91.0	92.2	91.9	93.2	94.0	93.9	91.5	96.7
12	315	86.5	90.9	89.4	90.0	90.4	91.4	91.7	91.4	90.5	88.7	94.9
13	400	83.9	88.4	87.2	88.4	88.1	88.1	90.6	90.9	89.6	87.7	93.9
14	500	82.2	85.2	85.9	86.7	88.6	88.1	88.7	88.4	88.1	86.1	92.7
15	630	80.9	84.9	84.8	85.9	86.9	87.9	87.6	87.4	85.8	83.9	91.4
16	800	82.5	85.1	85.3	85.8	87.1	86.5	86.3	87.6	86.6	85.5	91.1
17	1000	81.2	84.9	84.4	85.0	86.4	86.0	85.5	85.2	84.8	84.8	91.4
18	1250	86.6	90.1	91.1	92.1	89.6	88.3	86.4	84.8	83.4	84.3	91.1
19	1600	89.2	92.2	93.2	94.4	91.6	90.1	87.2	85.4	83.6	83.6	90.6
20	2000	86.8	89.6	89.3	89.1	87.9	85.3	82.6	81.4	80.9	79.9	86.3
21	2500	87.4	91.1	92.6	92.4	90.8	86.3	83.1	81.6	79.6	80.9	86.4
22	3150	89.4	93.7	95.0	94.4	92.6	87.7	83.9	82.0	80.2	79.4	85.9
23	4000	88.9	90.7	91.7	93.1	91.4	86.4	82.9	79.4	78.1	78.9	85.6
24	5000	87.3	89.3	90.5	90.9	90.8	87.7	81.8	78.6	76.9	78.6	85.5
25	6300	87.9	89.6	90.7	91.1	92.3	88.3	82.2	78.4	76.6	78.4	84.7
26	8000	87.2	87.7	89.0	89.8	90.5	86.2	80.3	76.4	76.1	76.7	83.0
27	10000	88.0	88.3	89.5	89.0	90.3	84.2	80.5	78.7	78.7	78.6	83.9
28	12500	86.5	88.7	89.6	89.6	90.0	83.2	81.8	82.0	81.6	81.6	85.3
29	16000	87.8	92.5	91.2	91.3	90.9	83.9	85.0	86.2	84.8	84.8	87.5

233

FOLDOUT FRAME

FROM THE ORIGINAL DATA.

CONFIGURATION NO 100

SPEED = 2988. RPM

PERCENT SPEED = 81.0

S S L E S S A R R A Y

ORIGINAL PAGE IS  
OF POOR QUALITYRADIUS WITH NO ATMOSPHERIC ATTENUATION  
(AND DIRECTIVITY COMPUTATIONS)

0. 90. 100. 140. 150. 160. 180.

.5 109.4 109.9 111.3 119.0 118.7 117.4

.7	100.5	101.8	99.0	103.5	102.7	104.7
.7	99.7	99.7	103.5	109.0	107.0	107.2
.8	99.8	100.7	105.2	111.7	110.8	109.7
.5	102.2	103.2	105.3	113.0	112.8	110.7
.5	99.3	99.8	102.5	111.3	111.2	107.8
.7	98.2	98.5	98.8	109.7	109.3	106.2
.5	96.5	96.7	94.2	107.3	106.5	105.5
.0	96.2	97.0	93.2	104.5	105.2	104.2
.4	95.0	95.2	91.0	99.9	103.0	103.7
.0	95.2	94.2	91.0	99.2	101.9	103.4
.2	94.0	93.9	91.5	96.7	100.7	102.2
.7	91.4	90.5	88.7	94.9	97.7	100.4
.6	90.9	89.6	87.7	93.9	97.2	98.4
.7	88.4	88.1	86.1	92.7	94.9	96.4
.6	87.4	85.8	83.9	91.4	93.6	94.8
.3	87.6	86.6	85.5	91.1	92.6	93.6
.5	85.2	84.8	84.8	91.4	92.7	92.3
.4	84.8	83.4	84.3	91.1	91.1	90.9
.2	85.4	83.6	83.6	90.6	89.7	89.2
.6	81.4	80.9	79.9	86.3	87.8	87.6
.1	81.6	79.6	80.9	86.4	86.9	86.6
.9	82.0	80.2	79.4	85.9	85.9	84.9
.9	79.4	78.1	78.9	85.6	85.1	84.1
.8	78.6	76.9	78.6	85.5	84.3	83.1
.2	78.4	76.6	78.4	84.7	84.2	82.6
.3	76.4	76.1	76.7	83.0	82.5	81.2
.5	78.7	78.7	78.6	83.9	82.3	83.2
.8	82.0	81.6	81.6	85.3	82.6	83.9
.0	86.2	84.8	84.8	87.5	84.7	85.9

233

FOLDOUT FRAME

2



# SPL LOSSLESS DATA AT 100 FOOT RADIUS

QCSEE OTW ENGINE

BELLMOUTH HARDWALL INLET

HARD CORE, NO SPLITTER

ENGINE WITH APPROACH FLAPS

READING NUMBERS = 153 154 155

CONFIGURATION NO = 100

SPEED = 3504. RPM

PE

TEMPERATURE = 37.0 F

RELATIVE HUMIDITY = 64.0 PC

## SIDELINE PLANE

BOOM MICROPHONES - LOSSLESS DATA

MIC # 14 15 16 17 18

R 0. 17. 31. 43. 54.

THETA  $\theta$  90. 90. 90. 90. 90.

Z 106. 98. 91. 86. 81.

DISTANCE 91. 85. 82. 83. 86.

PHI  $\phi$  0. 11. 22. 31. 39.

INDEX FREQ

1	25.	93.5	93.4	94.1	101.2	101.5
2	32.	94.8	95.2	98.6	100.3	100.7
3	40.	95.3	97.9	99.4	102.7	103.5
4	50.	99.6	101.7	100.3	104.3	103.7
5	63.	100.0	100.4	98.9	100.5	101.8
6	80.	99.6	100.1	97.6	100.4	103.3
7	100.	98.5	98.1	96.1	100.2	102.2
8	125.	99.8	98.7	97.8	101.7	101.8
9	160.	97.3	96.7	97.3	100.7	102.2
10	200.	97.0	97.1	98.3	100.9	101.7
11	250.	96.2	96.4	96.1	99.0	100.8
12	315.	95.3	95.7	96.4	99.7	100.5
13	400.	96.2	95.4	95.5	98.0	99.2
14	500.	95.7	95.3	95.1	97.9	98.9
15	630.	94.4	93.4	93.8	97.1	97.7
16	800.	95.1	93.8	93.7	96.4	96.4
17	1000.	97.1	95.7	94.9	98.1	97.1
18	1250.	95.0	94.0	93.4	95.8	95.8
19	1600.	99.7	96.8	95.8	95.9	95.6
20	2000.	92.0	90.9	89.9	91.7	91.7
21	2500.	89.5	88.6	87.6	90.2	90.5
22	3150.	89.8	88.4	86.9	89.8	89.3
23	4000.	89.3	87.8	85.4	88.0	87.7
24	5000.	89.3	87.2	83.8	87.1	87.0
25	6300.	88.8	87.0	82.8	86.4	86.2
26	8000.	87.7	85.0	80.2	85.0	84.5
27	10000.	88.4	85.6	77.9	84.0	83.9
28	12500.	89.6	85.4	75.3	82.0	81.5
29	16000.	90.0	85.0	73.7	81.4	81.2

FOLDOUT FRAME 1

234

OASPL

110.5 110.3 109.9 113.0 113.8

EED = 3504. RPM

PERCENT SPEED 95.0

FGK 20134

HUMIDITY = 64.0 PC

BAROMETER = 29.15 IN HG

XMH 463

SS. 85

FOLDOUT FRAME

2

FRAME 1

234

DATA OF 1201. SUBSET NO. 85. READINGS 153 154 155

QCSEE OTW ENGINE  
BELLMOUTH HARDWALL INLET  
HARD CORE, NO SPLITTER  
ENGINE WITH APPROACH FLAPS

*SPL* LOSSLESS ARRAY

*FL YOVER PLANE* DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERIC  
(FOR POWER AND DIRECTIVITY COMPUTATION)

*ENGINE CENTERLINE MICROPHONES*

ANGLE,  $\theta$  60. 90.

COMPUTED OASPL 118.9 120.4

BAND FREQUENCY

1	25	108.4	108.4
2	32	108.4	110.4
3	40	110.4	112.2
4	50	109.9	114.0
5	63	106.7	112.4
6	80	109.9	110.0
7	100	107.7	107.4
8	125	105.2	106.5
9	160	100.7	103.9
10	200	99.2	100.7
11	250	98.4	99.7
12	315	98.9	101.7
13	400	99.2	101.7
14	500	99.3	100.4
15	630	99.5	98.5
16	800	100.5	99.0
17	1000	105.0	100.0
18	1250	102.0	96.6
19	1600	105.7	97.4
20	2000	99.9	93.0
21	2500	97.6	92.1
22	3150	97.1	92.1
23	4000	95.2	90.6
24	5000	96.3	88.4
25	6300	96.1	88.5
26	8000	91.4	86.1
27	10000	93.1	85.5
28	12500	90.3	87.7
29	16000	91.4	90.9

235

FOLDOUT FRAME |

55

CONFIGURATION NO 100  
SPEED = 3504. RPM  
PERCENT SPEED = 95.0

SSLESS ARRAY

RADIUS WITH NO ATMOSPHERIC ATTENUATION  
AND DIRECTIVITY COMPUTATIONS)

235

FOLDOUT FRAME 2

DATA OF 1201. SUBSET NO. 85. READINGS 153 154 155

SIX DECIBELS HAVE BEEN SUBTRACTED FROM THE ORIGINAL DATA.  
 QCSEE OTW ENGINE  
 BELLMOUTH HAROWALL INLET  
 HARD CORE, NO SPLITTER  
 ENGINE WITH APPROACH FLAPS

ORIGINAL PAGE IS  
 OF POOR QUALITY

*SPL* LOSSLESS ARRAY

*FLYOVER PLANE*

DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERIC  
 (FOR POWER AND DIRECTIVITY COMPUTATION)

ANGLE  $\theta$  0. 30. 40. 50. 60. 70. 80. 90. 100. 140. 150.  
 COMPUTED OASPL 111.8 113.0 113.9 114.3 115.3 115.8 115.5 115.2 116.0 117.3 124.6

BAND FREQUENCY

1	25	97.7	99.2	104.3	104.0	105.3	105.3	103.0	105.0	102.7	103.7	109.2
2	32	99.3	102.8	104.7	104.7	106.5	105.3	105.7	103.8	105.5	107.5	112.0
3	40	102.5	104.8	105.7	104.3	106.0	104.0	105.2	105.3	107.2	110.7	114.8
4	50	103.7	106.0	106.0	104.5	103.3	104.3	108.2	107.5	110.3	112.2	118.0
5	63	102.8	103.0	102.7	101.8	102.8	105.5	106.7	106.5	107.5	108.8	117.8
6	80	102.5	101.8	98.0	101.8	105.0	105.8	104.2	105.0	106.3	106.2	117.3
7	100	98.8	97.0	100.5	103.3	103.8	103.3	103.5	103.0	102.8	100.5	113.2
8	125	99.2	98.9	102.4	103.5	101.7	102.7	101.9	102.4	103.0	97.9	111.0
9	160	97.0	99.7	99.5	97.9	99.7	101.0	101.4	101.9	100.4	97.2	107.5
10	200	94.7	97.4	95.7	98.0	98.0	99.9	100.9	100.9	98.9	97.4	106.4
11	250	93.2	93.2	95.7	97.2	97.7	98.9	99.9	99.4	97.4	96.2	103.9
12	315	92.9	95.9	95.2	96.0	97.4	99.0	98.5	97.4	95.9	95.5	102.7
13	400	90.7	93.9	94.4	94.9	95.7	96.9	97.6	96.6	95.4	95.2	100.7
14	500	90.4	91.4	93.2	93.6	96.1	96.1	95.7	93.6	93.7	93.6	99.1
15	630	90.3	92.1	93.3	96.4	95.9	97.3	94.9	94.3	93.1	92.6	97.8
16	800	90.5	91.0	94.5	97.8	98.3	97.5	95.0	94.6	93.8	94.5	97.8
17	1000	93.7	92.4	95.2	100.4	101.5	100.5	98.0	94.7	94.2	95.5	97.7
18	1250	91.3	90.5	92.4	96.1	99.6	98.1	94.9	93.1	91.6	94.4	96.4
19	1600	99.7	99.2	99.2	100.1	102.2	106.9	100.1	98.6	93.6	94.7	96.1
20	2000	92.1	92.1	92.6	93.1	96.8	97.7	92.8	91.1	88.3	92.3	94.1
21	2500	91.8	91.3	92.6	93.8	95.3	94.4	90.4	88.3	86.4	91.5	93.6
22	3150	93.9	94.1	93.8	96.4	96.3	94.9	91.1	87.4	86.6	88.5	92.1
23	4000	91.0	91.5	91.0	93.0	94.3	93.6	89.1	85.8	84.0	87.3	90.8
24	5000	92.1	92.1	91.9	94.4	94.2	93.0	88.0	84.5	82.7	87.2	90.9
25	6300	91.7	91.8	90.8	92.5	92.6	91.5	87.1	84.0	82.0	86.0	90.2
26	8000	90.1	90.3	88.5	90.8	91.1	89.6	84.8	81.3	79.6	84.1	88.5
27	10000	90.4	90.3	90.4	90.1	90.7	88.5	84.8	81.5	78.9	84.1	88.9
28	12500	89.1	89.3	88.5	89.0	89.4	86.8	83.5	81.6	81.7	84.0	91.7
29	16000	90.0	90.4	90.4	90.4	89.3	87.3	86.2	84.9	84.9	85.4	94.9

236

FOLDOUT FRAME |

DATA OF 1201. SUBSET NO. 85. READINGS 153 154 155

SIX DECIBELS HAVE BEEN SUBTRACTED FROM THE ORIGINAL DATA.  
OCSEE OTW ENGINE  
BELLMOUTH HARDWALL INLET  
HARD CORE, NO SPLITTER  
ENGINE WITH APPROACH FLAPS

ORIGINAL PAGE IS  
OF POOR QUALITY

*SPL* LOSSLESS ARRAY

*FLYOVER PLANE*

DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERIC  
(FOR POWER AND DIRECTIVITY COMPUTATION)

ANGLE  $\theta$  0. 30. 40. 50. 60. 70. 80. 90. 100. 140. 150.

COMPUTED OASPL 111.8 113.0 113.9 114.3 115.3 115.8 115.5 115.2 116.0 117.3 124.6

BAND FREQUENCY

1	25	97.7	99.2	104.3	104.0	105.3	105.3	103.0	105.0	102.7	103.7	109.2
2	32	99.3	102.8	104.7	104.7	106.5	105.3	105.7	103.8	105.5	107.5	112.0
3	40	102.5	104.8	105.7	104.3	106.0	104.0	105.2	105.3	107.2	110.7	114.8
4	50	103.7	106.0	106.0	104.5	103.3	104.3	108.2	107.5	110.3	112.2	118.0
5	63	102.8	103.0	102.7	101.8	102.8	105.5	106.7	106.5	107.5	108.8	117.8
6	80	102.5	101.8	98.0	101.8	105.0	105.8	104.2	105.0	106.3	106.2	117.3
7	100	98.8	97.0	100.5	103.3	103.8	103.3	103.5	103.0	102.8	100.5	113.2
8	125	99.2	98.9	102.4	103.5	101.7	102.7	101.9	102.4	103.0	97.9	111.0
9	160	97.0	99.7	99.5	97.9	99.7	101.0	101.4	101.9	100.4	97.2	107.5
10	200	94.7	97.4	95.7	98.0	98.0	99.9	100.9	100.9	98.9	97.4	106.4
11	250	93.2	93.2	95.7	97.2	97.7	98.9	99.9	99.4	97.4	96.2	103.9
12	315	92.9	95.9	95.2	96.0	97.4	99.0	98.5	97.4	95.9	95.5	102.7
13	400	90.7	93.9	94.4	94.9	95.7	96.9	97.6	96.6	95.4	95.2	100.7
14	500	90.4	91.4	93.2	93.6	96.1	96.1	95.7	93.6	93.7	93.6	99.1
15	630	90.3	92.1	93.3	96.4	95.9	97.3	94.9	94.3	93.1	92.6	97.8
16	800	90.5	91.0	94.5	97.8	98.3	97.5	95.0	94.6	93.8	94.5	97.8
17	1000	93.7	92.4	95.2	100.4	101.5	100.5	98.0	94.7	94.2	95.5	97.7
18	1250	91.3	90.5	92.4	96.1	99.6	98.1	94.9	93.1	91.6	94.5	96.4
19	1600	99.7	99.2	99.2	100.1	102.2	106.9	100.1	98.6	93.6	94.5	96.1
20	2000	92.1	92.1	92.6	93.1	96.8	97.7	92.8	91.1	88.3	92.5	94.1
21	2500	91.8	91.3	92.6	93.8	95.3	94.4	90.4	88.3	86.4	91.5	93.6
22	3150	93.9	94.1	93.8	96.4	96.8	94.9	91.1	87.4	86.6	88.5	92.1
23	4000	91.0	91.5	91.0	93.0	94.3	93.6	89.1	85.8	84.0	87.5	90.3
24	5000	92.1	92.1	91.9	94.4	94.2	93.0	88.0	84.5	82.7	87.5	90.9
25	6300	91.7	91.8	90.8	92.5	92.6	91.5	87.1	84.0	82.0	86.5	90.2
26	8000	90.1	90.3	88.5	90.8	91.1	89.6	84.8	81.3	79.6	84.1	88.5
27	10000	90.4	90.3	90.4	90.1	90.7	88.5	84.8	81.5	78.9	84.1	88.9
28	12500	89.1	89.3	88.5	89.0	89.4	86.8	83.5	81.6	81.7	84.0	91.7
29	16000	90.0	90.4	90.4	90.4	89.3	87.3	86.2	84.9	84.9	85.4	94.9

236

FOLDOUT FRAME /



FROM THE ORIGINAL DATA.

CONFIGURATION NO 100

SPEED = 3504. RPM

PERCENT SPEED = 95.0

ORIGINAL PAGE IS  
OF POOR QUALITY

O S S L E S S   A R R A Y

T RADIUS WITH NO ATMOSPHERIC ATTENUATION  
ER AND DIRECTIVITY COMPUTATIONS)

80.   90.   100.   140.   150.   160.   180.

15.5 115.2 116.0 117.3 124.6 125.5 124.9

03.0	105.0	102.7	103.7	109.2	104.3	107.3
05.7	103.8	105.5	107.5	112.0	109.5	109.3
05.2	105.3	107.2	110.7	114.8	113.7	114.2
08.2	107.5	110.3	112.2	118.0	117.8	118.5
06.7	106.5	107.5	108.8	117.8	118.5	116.3
04.2	105.0	106.3	106.2	117.3	117.8	114.3
03.5	103.0	102.8	100.5	113.2	116.0	113.0
01.9	102.4	103.0	97.9	111.0	115.0	113.2
01.4	101.9	100.4	97.2	107.5	111.7	112.9
00.9	100.9	98.9	97.4	106.4	110.7	112.5
99.9	99.4	97.4	96.2	103.9	109.2	111.0
98.5	97.4	95.9	95.5	102.7	106.5	110.5
97.6	96.6	95.4	95.2	100.7	106.1	108.2
95.7	93.6	93.7	93.6	99.1	104.2	106.4
94.9	94.3	93.1	92.6	97.8	102.6	104.9
95.0	94.6	93.8	94.5	97.8	101.1	103.5
98.0	94.7	94.2	95.5	97.7	99.9	102.2
94.9	93.1	91.6	94.4	96.4	98.9	100.4
00.1	98.6	93.6	94.7	96.1	98.2	99.4
92.8	91.1	88.3	92.3	94.1	96.3	97.4
90.4	88.3	86.4	91.3	93.6	95.1	96.4
91.1	87.4	86.6	88.3	92.1	93.7	94.1
89.1	85.8	84.0	87.3	90.8	92.5	93.0
88.0	84.5	82.7	87.2	90.9	91.7	92.2
87.1	84.0	82.0	86.0	90.2	91.2	91.5
84.8	81.3	79.6	84.1	88.5	89.3	89.1
84.8	81.5	78.9	84.1	88.9	89.5	89.7
83.5	81.6	81.7	84.0	91.7	91.7	91.7
86.2	84.9	84.9	85.4	94.9	94.9	94.9

236

FOLDOUT FRAME

2

FROM THE ORIGINAL DATA.

CONFIGURATION NO 100  
 SPEED = 3504. RPM  
 PERCENT SPEED = 95.0

O S S L E S S A R R A Y

ORIGINAL PAGE IS  
 OF POOR QUALITY

Y RADIUS WITH NO ATMOSPHERIC ATTENUATION  
 ER AND DIRECTIVITY COMPUTATIONS)

80. 90. 100. 140. 150. 160. 180.

115.5 115.2 116.0 117.3 124.6 125.5 124.9

03.0 105.0 102.7 103.7 109.2 104.3 107.3

05.7 103.8 105.5 107.5 112.0 109.5 109.3

05.2 105.3 107.2 110.7 114.8 113.7 114.2

08.2 107.5 110.3 112.2 118.0 117.8 118.5

06.7 106.5 107.5 108.8 117.8 118.5 116.3

04.2 105.0 106.3 106.2 117.3 117.8 114.3

03.5 103.0 102.8 100.5 113.2 116.0 113.0

01.9 102.4 103.0 97.9 111.0 115.0 113.2

01.4 101.9 100.4 97.2 107.5 111.7 112.9

00.9 100.9 98.9 97.4 106.4 110.7 112.5

99.9 99.4 97.4 96.2 103.9 109.2 111.0

98.5 97.4 95.9 95.5 102.7 106.5 110.5

97.6 96.6 95.4 95.2 100.7 106.1 108.2

95.7 93.6 93.7 93.6 99.1 104.2 106.4

94.9 94.3 93.1 92.6 97.8 102.6 104.9

95.0 94.6 93.8 94.5 97.8 101.1 103.5

98.0 94.7 94.2 95.5 97.7 99.9 102.2

94.9 93.1 91.6 94.4 96.4 98.9 100.4

00.1 98.6 93.6 94 96.1 98.2 99.4

92.8 91.1 88.3 92 94.1 96.3 97.4

90.4 88.3 86.4 91 93.6 95.1 96.4

91.1 87.4 86.6 88 92.1 93.7 94.1

89.1 85.8 84.0 87.3 90.3 92.5 93.0

88.0 84.5 82.7 87.2 90.9 91.7 92.2

87.1 84.0 82.0 86.0 90.2 91.2 91.5

84.8 81.3 79.6 84.1 88.5 89.3 89.1

84.8 81.5 78.9 84.1 88.9 89.5 89.7

83.5 81.6 81.7 84.0 91.7 91.7 91.7

86.2 84.9 84.9 85.4 94.9 94.9 94.9

236

FOLDOUT FRAME

2



SPL

LOSSLESS DATA AT 100 FOOT RADIUS

QCSEE OTW ENGINE

BELLMOUTH HARDWALL INLET

ORIGINAL PAGE IS  
OF POOR QUALITY

HARD CORE, NO SPLITTER

ENGINE WITH APPROACH FLAPS

READING NUMBERS = 156 157 158

CONFIGURATION NO = 100

SPEED = 1905. RPM

TEMPERATURE = 25.0 F

RELATIVE HUMIDITY = 74.0 PC

SIDELINE PLANE

8COM MICROPHONES - LOSSLESS DATA

MIC #	14	15	16	17	18	19
R	0.	17.	31.	43.	54.	35.
THETA, $\theta_s$	90.	90.	90.	90.	90.	<del>90.</del> 120
Z	106.	98.	91.	86.	81.	65.
DISTANCE	91.	85.	82.	83.	86.	61.
PHI, $\phi$	0.	11.	22.	31.	39.	35.

INDEX	FREQ						
1	25.	83.0	81.0	82.8	82.2	86.2	81.4
2	32.	82.1	82.9	82.9	83.3	85.7	81.2
3	40.	79.5	81.0	83.3	83.8	83.5	82.0
4	50.	84.5	83.4	87.1	89.3	89.5	87.0
5	63.	84.0	82.4	83.9	83.5	83.7	84.0
6	80.	81.8	81.9	83.9	81.7	82.5	85.0
7	100.	82.0	81.2	81.8	81.0	82.7	83.5
8	125.	78.5	79.4	80.6	80.9	80.7	80.1
9	160.	78.2	77.9	80.6	79.5	79.7	78.9
10	200.	78.2	78.7	80.1	80.2	81.7	79.1
11	250.	80.7	79.2	79.8	80.0	80.3	79.1
12	315.	79.3	77.2	78.3	77.9	79.2	77.2
13	400.	77.2	75.9	76.3	76.4	77.2	77.4
14	500.	75.9	74.3	76.0	75.6	76.0	76.6
15	630.	77.5	75.6	74.6	75.2	75.0	75.6
16	800.	79.1	76.6	75.8	76.1	76.4	76.9
17	1000.	77.8	76.8	75.9	75.6	75.9	76.6
18	1250.	76.8	75.2	73.8	73.7	74.0	74.9
19	1600.	74.3	72.3	71.7	71.8	71.9	72.6
20	2000.	73.8	71.2	70.8	71.1	72.3	71.5
21	2500.	73.5	70.7	70.1	70.5	71.0	70.5
22	3150.	72.2	68.7	67.2	68.1	68.7	69.6
23	4000.	72.6	69.0	67.2	68.0	68.1	69.3
24	5000.	74.1	70.5	67.8	69.4	68.3	68.4
25	6300.	78.7	75.1	70.5	72.5	71.5	72.1
26	8000.	77.2	74.1	69.3	73.0	71.6	72.4
27	10000.	79.5	76.7	69.5	74.7	73.1	72.5
28	12500.	84.0	79.9	69.9	75.2	72.8	74.3
29	16000.	78.2	73.3	63.8	70.0	67.2	68.8

NASPL 94.3 93.0 94.1 94.5 95.3 94.1

FOLDOUT FRAME

ET

ORIGINAL PAGE IS  
OF POOR QUALITY

FLAPS

158

SPEED = 1905. RPM

PERCENT SPEED

47.0

FGK

5502

ATIVE HUMIDITY = 74.0 PC

BAROMETER = 29.50 IN HG

XMU

.226

DATA

120

S.S. 86

237

FOLDOUT FRAME

2

DATA OF 1211. SUBSET NO. 86. READINGS 156 157 158

SIX DECIBELS HAVE BEEN SUBTRACTED FROM THE ORIGINAL DATA.  
 QCSEE OTW ENGINE  
 BELLMOUTH HARDWALL INLET  
 HARD CORE, NO SPLITTER  
 ENGINE WITH APPROACH FLAPS

ORIGINAL PAGE IS  
 OF POOR QUALITY

SPL

LOSSLESS ARRAY

FLYOVER PLANE

DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERIC  
 (FOR POWER AND DIRECTIVITY COMPUTATION)

ANGLE, $\theta$		0.	30.	40.	50.	60.	70.	80.	90.	100.	140.	150.
COMPUTED DASPL		107.1	101.9	101.4	98.3	97.3	95.5	94.2	93.7	95.1	96.5	102.2
BAND FREQUENCY												
1	25	86.5	89.8	92.5	90.3	91.5	89.7	88.2	85.8	87.7	90.5	98.2
2	32	88.0	89.2	90.8	88.0	87.3	87.5	85.8	84.0	85.5	90.8	94.2
3	40	86.5	89.2	89.0	88.7	86.2	84.5	83.7	82.8	85.3	87.7	92.2
4	50	88.0	88.7	89.3	86.8	86.3	85.0	84.8	87.2	88.0	87.8	92.2
5	63	87.7	86.0	85.8	83.0	83.2	83.7	84.8	83.7	85.5	85.0	90.2
6	80	85.8	83.8	82.7	82.7	84.2	83.3	81.8	81.3	83.0	81.3	87.2
7	100	85.2	83.3	83.8	83.5	83.2	82.3	81.3	82.0	81.8	80.2	83.2
8	125	83.9	83.0	83.4	83.0	80.9	80.4	79.2	78.9	80.2	78.7	81.2
9	160	80.7	81.5	80.9	78.5	78.4	77.7	77.4	77.4	79.7	76.4	80.2
10	200	88.4	81.9	81.7	80.2	78.9	78.5	78.5	79.4	80.2	78.0	79.2
11	250	83.4	80.9	78.5	79.2	78.4	77.5	77.7	78.7	80.0	77.2	78.2
12	315	79.5	79.0	76.9	76.5	76.4	76.4	76.2	76.4	77.7	73.2	75.2
13	400	78.4	76.9	75.4	75.1	74.9	73.9	73.7	74.1	75.7	72.2	74.2
14	500	78.1	75.4	74.4	74.2	73.7	72.7	71.1	73.1	73.6	73.4	73.2
15	630	78.3	76.9	75.6	75.4	73.9	72.9	71.8	72.1	72.4	70.8	73.2
16	800	85.7	84.2	84.8	84.0	79.8	76.0	72.7	73.3	74.5	72.2	76.2
17	1000	86.6	86.4	87.6	86.7	82.4	77.4	73.6	73.4	74.6	71.2	75.2
18	1250	85.5	85.3	83.3	81.7	78.3	75.0	71.3	70.0	71.0	68.3	76.2
19	1600	87.9	86.9	85.9	84.5	81.5	76.5	71.2	69.0	69.7	67.0	73.2
20	2000	87.3	86.4	85.9	85.8	82.5	77.8	71.4	67.8	68.3	64.1	68.2
21	2500	85.3	85.3	84.8	85.8	82.3	77.0	69.3	63.1	64.6	61.3	68.2
22	3150	84.1	82.4	82.3	81.7	78.2	71.4	63.2	55.5	59.5	60.4	66.2
23	4000	85.1	83.3	82.9	81.2	76.9	68.0	58.6	52.2	56.2	57.9	65.2
24	5000	86.5	85.6	84.0	79.1	76.5	65.9	54.1	53.9	56.5	57.1	64.2
25	6300	104.2	91.8	86.8	78.6	79.4	70.9	54.5	54.9	58.7	56.5	67.2
26	8000	101.0	95.4	93.9	79.5	80.1	77.3	56.1	56.2	59.2	56.0	66.2
27	10000	91.9	93.7	91.8	80.1	83.3	78.1	60.3	57.7	58.8	57.7	67.2
28	12500	90.2	80.5	85.2	70.6	68.4	67.3	60.1	60.1	60.4	61.5	69.2
29	16000	89.5	75.0	82.8	75.2	70.1	64.8	60.9	60.9	60.9	60.9	71.2

238

FOLDOUT FRAME

ED FROM THE ORIGINAL DATA.

CONFIGURATION NO 100  
SPEED = 1905. RPM  
PERCENT SPEED = 47.0

LOSSLESS ARRAY

ORIGINAL PAGE IS  
OF POOR QUALITY.

0 FT RADIUS WITH NO ATMOSPHERIC ATTENUATION  
POWER AND DIRECTIVITY COMPUTATIONS)

	80.	90.	100.	140.	150.	160.	180.
5	94.2	93.7	95.1	96.5	102.2	100.3	100.9
7	88.2	85.8	87.7	90.5	98.8	93.8	92.8
5	85.8	84.0	85.5	90.8	94.0	93.2	94.3
5	83.7	82.8	85.3	87.7	92.8	91.8	92.0
0	84.8	87.2	88.0	87.8	92.5	90.7	90.7
7	84.8	83.7	85.5	85.0	90.9	90.5	93.0
3	81.8	81.3	83.0	81.3	87.2	88.3	90.5
3	81.3	82.0	81.8	80.2	83.7	85.0	87.5
4	79.2	78.9	80.2	78.7	81.2	84.0	84.9
7	77.4	77.4	79.7	76.4	80.3	83.9	83.0
5	78.5	79.4	80.2	78.0	79.5	83.9	82.5
5	77.7	78.7	80.0	77.2	78.5	81.7	80.7
4	76.2	76.4	77.7	73.2	75.2	79.9	79.7
9	73.7	74.1	75.7	72.2	74.7	77.7	77.6
7	71.1	73.1	73.6	73.4	73.9	75.7	76.4
9	71.8	72.1	72.4	70.8	73.6	75.3	75.3
0	72.7	73.3	74.5	72.2	76.0	76.5	75.7
4	73.6	73.4	74.6	71.2	75.9	76.1	75.7
0	71.3	70.0	71.0	68.3	76.3	74.8	73.3
5	71.2	69.0	69.7	67.0	73.0	71.5	71.3
8	71.4	67.8	68.3	64.1	68.9	68.6	70.6
0	69.3	63.1	64.6	61.3	68.0	67.3	69.8
4	63.2	55.5	59.5	60.4	66.1	64.4	67.6
0	58.6	52.2	56.2	57.9	65.7	63.1	66.7
9	54.1	53.9	56.5	57.1	64.3	63.2	66.8
9	54.5	54.9	58.7	56.5	67.3	64.5	67.5
3	56.1	56.2	59.2	56.0	66.3	66.0	66.0
1	60.3	57.7	58.8	57.7	67.7	67.7	67.7
3	60.1	60.1	60.4	61.5	69.3	69.3	71.8
8	60.9	60.9	60.9	60.9	71.0	71.0	71.4

238

FOLDOUT FRAME 2

# *SPL* LOSSLESS DATA AT 100 FOOT RADIUS

QCSEE OTW ENGINE

BELLMOUTH HARDWALL INLET

HARD CORE, NO SPLITTER

ENGINE WITH APPROACH FLAPS

READING NUMBERS = 159 160 161

CONFIGURATION NO = 100 SPEED = 2967. RPM

TEMPERATURE = 25.0 F RELATIVE HUMIDITY = 74.0 PC

## *SIDELINE PLANE* BOOM MICROPHONES - LOSSLESS DATA

MIC #	14	15	16	17	18	19
R	0.	17.	31.	43.	54.	35.
THETA, $\theta_s$	90.	90.	90.	90.	90.	<del>90</del> 120
Z	106.	98.	91.	86.	81.	65.
DISTANCE	91.	85.	82.	83.	86.	61.
PHI, $\phi$	0.	11.	22.	31.	39.	35.

INDEX	FREQ						
1	25.	88.8	91.7	93.1	96.0	96.3	92.2
2	32.	91.5	92.2	93.9	95.7	97.8	95.0
3	40.	92.3	92.9	94.4	95.2	95.5	94.2
4	50.	96.0	95.0	95.8	97.3	96.8	96.2
5	63.	95.5	94.2	95.8	95.9	95.2	96.5
6	80.	94.6	94.9	94.3	93.9	96.5	96.0
7	100.	93.3	93.1	92.8	93.7	95.5	95.0
8	125.	93.5	92.7	93.6	93.9	95.2	95.6
9	160.	91.5	91.1	92.9	93.7	94.3	92.9
10	200.	91.0	91.2	92.1	93.5	93.8	92.9
11	250.	91.5	90.1	91.8	92.5	93.8	92.9
12	315.	90.7	89.6	91.3	92.5	93.2	91.7
13	400.	90.2	88.4	89.8	91.4	91.7	89.9
14	500.	89.4	88.1	89.5	89.7	91.0	89.2
15	630.	88.5	87.1	88.3	88.9	89.2	88.4
16	800.	88.4	87.3	87.7	88.3	88.7	88.3
17	1000.	87.3	85.8	86.4	87.0	87.3	87.1
18	1250.	88.3	87.1	86.1	87.0	88.3	86.7
19	1600.	87.9	84.3	85.0	86.0	88.1	85.8
20	2000.	83.3	81.8	82.0	82.9	83.3	82.9
21	2500.	83.9	81.7	82.2	83.2	83.3	82.7
22	3150.	84.4	81.5	81.5	83.3	83.2	82.8
23	4000.	84.2	81.5	80.1	81.9	81.6	81.7
24	5000.	83.4	80.6	78.2	80.4	79.9	78.5
25	6300.	84.3	81.7	78.1	80.9	80.2	79.1
26	8000.	83.3	79.9	75.4	79.8	78.5	79.4
27	10000.	85.6	81.8	74.5	79.8	78.8	78.8
28	12500.	86.5	82.0	72.2	78.5	76.5	76.2
29	16000.	85.2	81.0	70.3	77.1	74.8	74.7

OASPL 105.0 104.4 105.2 106.2 107.0 106.0

FOLDOUT FRAME /

ET

APS

161

SPEED = 2967. RPM

PERCENT SPEED

81.0

FEK 13987

ATIVE HUMIDITY = 74.0 PC

BAROMETER = 29.49 IN HG

XMH .362

ATA

120

S.S. 87

FOLDOUT FRAME 1

239

FOLDOUT FRAME 2

DATA OF 1211. SUBSET NO. 87. READINGS 159 160 161

SIX DECIBELS HAVE BEEN SUBTRACTED FROM THE ORIGINAL DATA.  
 QCSEE OTW ENGINE  
 BELLMOUTH HARDWALL INLET  
 HARD CORE, NO SPLITTER  
 ENGINE WITH APPROACH FLAPS

ORIGINAL PAGE IS  
 OF POOR QUALITY

SPL

LOSSLESS ARRAY

FLYOVER PLANE

DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERIC  
 (FOR POWER AND DIRECTIVITY COMPUTATION)

ANGLE *of* 0. 30. 40. 50. 60. 70. 80. 90. 100. 140. 180.

COMPUTED OASPL 108.4 109.8 109.7 110.0 111.4 108.2 109.0 109.6 112.1 110.5 116.0

BAND FREQUENCY

1	25	96.8	98.5	99.7	100.8	103.3	101.0	101.8	98.7	102.5	100.5	103.0
2	32	97.7	101.0	100.7	102.3	103.7	99.3	98.5	100.3	101.8	104.3	106.0
3	40	99.3	101.3	102.7	103.5	104.0	95.2	98.3	101.3	104.8	102.8	108.0
4	50	99.2	101.2	101.5	100.0	101.5	97.7	100.3	102.5	104.8	104.5	110.0
5	63	99.5	98.5	97.7	95.7	101.0	99.2	100.2	100.3	103.7	99.8	108.0
6	80	97.7	95.2	91.7	95.3	99.8	98.2	98.7	97.3	100.7	97.2	107.0
7	100	93.5	91.8	93.7	96.5	98.2	96.0	97.0	97.5	99.8	94.3	104.0
8	125	93.5	93.5	96.4	96.9	96.9	95.4	95.4	96.0	98.2	92.5	100.0
9	160	90.2	94.9	94.4	91.4	94.4	92.7	93.5	94.4	96.5	91.4	98.0
10	200	89.7	91.5	90.4	91.7	93.9	92.7	93.9	95.5	95.7	90.4	96.0
11	250	89.7	87.7	90.7	91.0	93.0	91.4	93.7	94.4	94.7	89.5	94.0
12	315	87.9	89.4	88.9	89.5	91.4	91.2	90.9	92.5	93.2	87.5	93.0
13	400	85.2	87.2	86.9	87.9	88.9	89.2	91.2	91.7	90.7	86.6	92.0
14	500	84.2	85.6	85.7	86.2	88.4	88.7	88.6	90.2	89.9	85.7	90.0
15	630	83.4	84.3	84.8	86.4	86.9	87.3	87.9	89.8	88.6	85.3	89.0
16	800	85.5	84.8	85.2	86.0	87.2	86.7	85.0	85.0	87.0	86.2	89.0
17	1000	84.4	85.9	84.9	85.4	85.7	85.7	84.9	81.6	85.7	85.4	88.0
18	1250	90.7	93.7	94.5	94.2	93.0	89.3	86.0	86.2	85.8	83.8	87.0
19	1600	93.0	95.3	95.5	95.8	94.2	90.0	86.0	86.7	85.8	82.0	86.0
20	2000	90.4	92.6	89.3	88.4	87.4	85.3	80.1	79.6	81.3	78.8	85.0
21	2500	91.4	94.7	92.6	91.7	90.4	87.9	81.0	75.0	77.2	79.2	81.0
22	3150	92.5	96.3	93.8	92.5	91.4	88.6	80.7	72.9	77.7	76.7	81.0
23	4000	92.9	94.9	92.2	92.9	90.2	83.5	71.9	64.0	72.5	74.7	79.0
24	5000	91.6	94.3	90.5	89.2	87.6	80.8	66.5	65.5	73.7	73.3	78.0
25	6300	92.3	94.8	91.0	87.0	86.7	82.3	65.0	65.7	74.5	74.5	75.0
26	8000	92.7	91.9	88.9	81.6	81.5	79.6	66.0	66.0	76.0	76.0	76.0
27	10000	92.6	91.0	87.9	76.9	78.0	77.6	67.7	67.7	77.7	77.7	77.0
28	12500	90.1	83.1	86.5	73.2	79.3	70.6	69.3	69.3	79.3	79.3	79.0
29	16000	86.9	75.8	84.8	78.4	81.0	73.1	71.1	71.0	81.0	81.0	81.0

240

FOLDOUT FRAME

161

FROM THE ORIGINAL DATA.

CONFIGURATION NO 100

SPEED = 2967. RPM

PERCENT SPEED = 81.0

O S S L E S S A R R A Y

T RADIUS WITH NO ATMOSPHERIC ATTENUATION  
AND DIRECTIVITY COMPUTATIONS)ORIGINAL PAGE IS  
OF POOR QUALITY*MICROPHONE BLOWN OFF  
POSITION BY WAKE DURING RUN*

80. 90. 100. 140. 150. 160. 180.

09.0 109.6 112.1 110.5 116.6 118.2 117.6

01.8	98.7	102.5	100.5	103.7	101.5	104.2
98.5	100.3	101.8	104.3	106.8	107.3	107.8
98.3	101.3	104.8	102.8	108.8	110.8	111.3
00.3	102.5	104.8	104.5	110.7	110.8	109.8
00.2	100.3	103.7	99.8	108.5	111.2	109.8
98.7	97.3	100.7	97.2	107.3	109.0	107.2
97.0	97.5	99.8	94.3	104.7	106.7	103.8
95.4	96.0	98.2	92.5	100.5	104.2	103.4
93.5	94.4	96.5	91.4	98.2	102.7	102.0
93.9	95.5	95.7	90.4	96.0	102.0	102.0
93.7	94.4	94.7	89.5	94.7	99.2	100.2
90.9	92.5	93.2	87.5	93.2	97.5	98.7
91.2	91.7	90.7	86.6	92.6	96.7	96.9
88.6	90.2	89.9	85.7	90.7	94.6	95.4
87.9	89.8	88.6	85.3	89.3	92.8	92.8
85.0	85.0	87.0	86.2	89.0	92.0	92.2
84.9	81.6	85.7	85.4	88.2	91.1	91.2
86.0	86.2	85.8	83.8	87.2	89.2	90.2
86.0	86.7	85.8	82.0	86.8	88.7	89.2
80.1	79.6	81.3	78.8	85.1	85.9	87.3
81.0	75.0	77.2	79.2	81.2	83.0	86.0
80.7	72.9	77.7	76.7	81.3	83.1	83.9
71.9	64.0	72.5	74.7	79.1	80.7	82.0
66.5	65.5	73.7	73.3	78.9	79.1	79.6
65.0	65.7	74.5	74.5	75.4	77.1	77.2
66.0	66.0	76.0	76.0	76.0	77.5	76.0
67.7	67.7	77.7	77.7	77.7	77.6	77.7
69.3	69.3	79.3	79.3	79.3	79.3	79.3
71.1	71.0	81.0	81.0	81.1	81.0	81.0

240

FOLDOUT FRAME 2



# *SPL* LOSSLESS DATA AT 100 FOOT RADIUS

QCSEE OTW ENGINE

BELLMOUTH HARDWALL INLET

HARD CORE, NO SPLITTER

ENGINE WITH APPROACH FLAPS

READING NUMBERS = 162 163 164

CONFIGURATION NO = 100

SPEED = 3479. RPM

TEMPERATURE = 26.0 F

RELATIVE HUMIDITY = 74.0 PC

*SIDELINE PLANE*

BOOM MICROPHONES - LOSSLESS DATA

MIC # 14 15 16 17 18 19

R 0. 17. 31. 43. 54. 35.

THETA,  $\theta_s$  90. 90. 90. 90. 90. ~~90~~/120

Z 106. 98. 91. 86. 81. 65.

DISTANCE 91. 85. 82. 83. 86. 61.

PHI,  $\phi$  0. 11. 22. 31. 39. 35.

INDEX FREQ

1	25.	92.6	94.7	99.1	97.7	99.5	94.2
2	32.	94.7	96.4	99.4	100.0	102.7	97.5
3	40.	95.1	96.4	101.1	101.0	103.5	98.7
4	50.	98.8	99.4	101.9	101.5	103.2	100.7
5	63.	100.1	99.7	101.3	100.7	101.7	100.5
6	90.	100.1	97.9	101.3	99.4	102.2	102.5
7	100.	97.8	97.1	99.6	99.5	99.8	99.4
8	125.	98.2	97.2	99.1	100.2	101.0	100.9
9	160.	97.2	96.6	99.3	99.4	101.0	99.6
10	200.	96.7	96.7	99.1	99.7	101.7	98.9
11	250.	95.8	96.1	98.1	99.0	100.2	98.4
12	315.	95.2	95.2	97.9	99.0	100.0	97.4
13	400.	95.8	94.9	96.9	97.9	98.9	96.7
14	500.	94.5	94.4	96.3	96.4	97.9	95.6
15	630.	93.7	93.8	95.3	95.7	96.9	95.1
16	800.	94.2	93.1	95.2	95.8	96.1	94.1
17	1000.	96.4	94.8	97.0	96.1	96.3	94.8
18	1250.	94.0	93.4	93.9	94.7	94.7	92.8
19	1600.	96.2	95.0	96.7	96.1	96.1	94.6
20	2000.	90.6	89.3	90.0	90.8	91.1	90.0
21	2500.	88.8	87.9	87.9	89.3	89.8	88.8
22	3150.	88.7	87.7	86.9	88.6	89.0	88.6
23	4000.	88.2	86.5	85.1	86.9	87.3	86.7
24	5000.	88.5	86.3	83.9	86.2	86.2	83.7
25	6300.	88.5	86.5	83.1	85.7	85.6	84.3
26	8000.	87.1	84.6	80.1	84.8	83.9	84.4
27	10000.	88.2	85.4	78.9	84.1	83.4	83.2
28	12500.	89.1	85.6	76.2	82.7	80.9	80.6
29	16000.	88.6	84.7	76.7	81.5	79.7	79.7

04SPL

109.8 109.4 111.8 111.8 113.2 111.2

FOLDOUT FRAME

APS

164

SPEED = 3479. RPM

PERCENT SPEED 95.0

FGK 19783

ATIVE HUMIDITY = 74.0 PC

BAROMETER = 29.48 IN HG

XMM .443

TA

120

S.S. 88

241

FOLDOUT FRAME

2

DATA OF 1211. SUBSET NO. 88. READINGS 162 163 164

SIX DECIBELS HAVE BEEN SUBTRACTED FROM THE ORIGINAL DATA.

QCSEE OTW ENGINE

BELLMOUTH HARDWALL INLET

HARD CORE, NO SPLITTER

ENGINE WITH APPROACH FLAPS

ORIGINAL PAGE IS  
OF POOR QUALITY

SPL LOSSLESS ARRAY

*FLYOVER PLANE* DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERIC  
(FOR POWER AND DIRECTIVITY COMPUTATION)

ANGLE  $\theta$  0. 30. 40. 50. 60. 70. 80. 90. 100. 140. 150.

COMPUTED DASPL 111.8 112.8 113.2 113.8 114.6 115.0 114.9 115.8 115.7 116.4 122.

BAND FREQUENCY

1	25	99.5	99.5	101.5	101.5	102.3	105.0	102.3	104.8	104.3	102.5	107.3
2	32	100.8	101.5	103.5	104.8	104.8	103.3	103.8	105.8	105.2	107.3	111.8
3	40	102.0	104.0	105.0	104.5	105.7	103.0	104.5	106.5	108.2	110.0	113.2
4	50	103.7	105.5	104.8	103.7	103.2	103.7	107.0	107.0	108.3	110.5	114.6
5	63	103.7	102.3	101.7	101.7	102.0	104.8	106.5	106.8	107.3	106.5	115.0
6	80	101.5	100.5	99.0	101.2	104.0	105.7	104.0	104.7	104.7	105.7	114.6
7	100	97.8	96.5	100.7	102.0	103.5	102.8	104.0	102.8	102.7	103.0	110.0
8	125	98.2	99.0	101.7	103.2	101.0	102.0	102.5	103.4	102.2	101.0	109.8
9	160	95.2	100.7	99.5	97.7	99.7	101.0	100.7	101.7	101.0	99.5	105.8
10	200	93.5	98.2	95.9	97.7	98.2	99.2	100.0	103.2	100.5	96.5	104.8
11	250	92.2	94.0	96.0	96.9	97.7	98.4	100.7	101.7	97.9	96.3	102.5
12	315	92.2	95.4	95.2	96.0	96.2	97.7	99.0	100.7	97.5	96.3	100.8
13	400	90.4	94.2	93.7	94.4	95.6	96.6	98.9	98.9	96.7	94.6	99.8
14	500	89.2	91.2	92.4	93.6	95.1	96.2	96.6	98.1	95.2	93.1	97.8
15	630	89.4	92.3	92.8	95.9	97.3	95.9	95.6	98.6	94.3	92.4	96.8
16	800	87.6	90.8	93.8	95.8	98.2	97.5	93.0	91.1	93.3	95.0	95.8
17	1000	90.6	93.1	95.7	100.6	101.2	99.9	96.6	94.2	93.2	94.7	95.8
18	1250	90.5	91.5	92.7	97.0	98.3	97.7	94.3	94.5	91.3	91.6	93.8
19	1600	99.3	101.2	100.2	101.2	105.2	105.8	99.8	100.0	92.8	89.8	94.8
20	2000	91.4	93.1	92.7	93.7	95.7	96.7	89.9	90.2	87.2	87.9	93.8
21	2500	92.5	93.3	92.3	94.5	93.3	93.5	86.8	81.9	81.8	87.4	88.8
22	3150	95.2	94.9	94.4	96.0	94.9	93.2	83.8	78.5	79.7	85.2	88.8
23	4000	92.5	92.9	92.9	93.3	90.8	88.1	78.9	72.5	73.6	82.0	85.8
24	5000	94.0	94.6	93.9	92.7	90.7	86.1	73.0	73.1	74.0	80.6	84.8
25	6300	93.8	94.2	92.6	88.3	87.2	85.8	74.5	74.5	74.8	78.6	84.8
26	8000	92.9	91.5	90.6	82.0	83.4	83.3	76.1	76.1	76.1	77.0	86.8
27	10000	92.5	89.9	89.4	77.9	79.5	80.7	77.8	77.8	77.8	78.3	87.8
28	12500	89.6	82.2	87.6	79.6	79.6	79.6	79.6	79.6	79.6	79.6	89.8
29	16000	86.2	81.3	85.6	81.4	81.4	81.8	81.4	81.4	81.4	81.4	91.8

242

FOLDOUT FRAME 1

FROM THE ORIGINAL DATA.

CONFIGURATION NO 100

SPEED = 3479. RPM

PERCENT SPEED = 95.0

LOSSLESS ARRAY

ORIGINAL PAGE IS  
OF POOR QUALITYET RADIUS WITH NO ATMOSPHERIC ATTENUATION  
POWER AND DIRECTIVITY COMPUTATIONS)

80.	90.	100.	140.	150.	160.	180.
114.9	115.8	115.7	116.4	122.2	124.9	123.3
102.3	104.8	104.3	102.5	107.3	106.7	104.8
103.8	105.8	105.2	107.3	111.3	110.8	110.3
104.5	106.5	108.2	110.0	113.2	115.5	113.2
107.0	107.0	108.3	110.5	114.5	118.0	116.3
106.5	106.8	107.3	106.5	115.5	117.2	114.8
104.0	104.7	104.7	105.7	114.7	116.7	114.2
104.0	102.8	102.7	103.0	110.8	114.8	111.8
102.5	103.4	102.2	101.0	109.2	112.4	110.5
100.7	101.7	101.0	99.5	105.9	111.7	109.7
100.0	103.2	100.5	96.5	104.5	110.9	110.7
100.7	101.7	97.9	96.3	102.4	108.0	108.5
99.0	100.7	97.5	96.3	100.7	105.5	108.9
98.9	98.9	96.7	94.6	99.6	105.6	106.1
96.6	98.1	95.2	93.1	97.7	102.7	104.7
95.6	98.6	94.3	92.4	96.3	100.6	102.9
93.0	91.1	93.3	95.0	95.6	99.1	101.6
96.6	94.2	93.2	94.7	95.0	97.2	100.9
94.3	94.5	91.3	91.6	93.0	95.7	99.0
99.8	100.0	92.8	89.8	94.2	97.3	98.3
89.9	90.2	87.2	87.9	93.2	94.7	96.4
86.8	81.9	81.8	87.4	88.1	90.3	94.8
83.8	78.5	79.7	85.2	88.5	90.9	93.4
78.9	72.5	73.6	82.0	85.7	87.8	90.8
73.0	73.1	74.0	80.6	84.9	87.4	88.4
74.5	74.5	74.8	78.6	84.5	85.8	95.2
76.1	76.1	76.1	77.0	86.1	86.1	86.1
77.8	77.8	77.8	78.3	87.8	87.8	87.8
79.6	79.6	79.6	79.6	89.6	89.6	89.6
81.4	81.4	81.4	81.4	91.4	91.4	91.4

242

# SPL LOSSLESS DATA AT 100 FOOT RADIUS

QCSEE OTW ENGINE

BELLMOUTH HARDWALL INLET

HARD CORE, NO SPLITTER

ORIGINAL PAGE IS  
OF POOR QUALITY

ENGINE WITH APPROACH FLAPS

READING NUMBERS = 165 166 167

CONFIGURATION NO = 100

SPEED = 3150. RPM

TEMPERATURE = 26.0 F

RELATIVE HUMIDITY = 74.0 PC

SIDELINE PLANE

BOOM MICROPHONES - LOSSLESS DATA

MIC #	14	15	16	17	18	19
R	0.	17.	31.	43.	54.	35.
THETA, $\theta_s$	90.	90.	90.	90.	90.	<del>90.</del> 120
Z	106.	98.	91.	86.	81.	65.
DISTANCE	91.	85.	82.	83.	86.	61.
PHI, $\phi$	0.	11.	22.	31.	39.	35.

INDEX	FREQ						
1	25.	91.1	90.2	93.1	96.8	100.2	94.0
2	32.	93.6	93.7	95.8	98.8	97.8	96.2
3	40.	95.1	95.7	96.9	96.7	99.3	95.5
4	50.	98.1	97.9	98.1	99.0	101.0	98.4
5	63.	97.6	95.9	96.8	96.5	96.7	97.7
6	80.	96.0	95.6	96.6	96.0	98.7	97.5
7	100.	95.8	93.6	94.6	95.2	97.8	96.5
8	125.	95.2	94.7	94.8	96.9	98.0	96.9
9	160.	94.8	93.4	94.9	95.5	97.0	95.9
10	200.	94.7	93.2	94.4	95.9	98.0	94.9
11	250.	93.7	93.1	94.4	95.7	96.7	94.7
12	315.	92.7	91.4	93.6	94.4	95.0	93.6
13	400.	92.5	91.1	93.3	93.7	94.9	92.2
14	500.	91.9	90.6	91.6	92.9	93.9	91.4
15	630.	90.5	89.6	90.6	91.7	92.0	90.6
16	800.	90.6	89.5	90.0	90.9	91.4	90.1
17	1000.	88.9	88.2	89.0	89.3	89.6	89.3
18	1250.	88.8	86.7	87.8	88.4	88.8	88.2
19	1600.	91.8	89.8	90.2	90.6	90.3	88.1
20	2000.	85.2	84.5	84.8	85.4	86.2	85.2
21	2500.	84.8	83.7	83.2	84.6	85.3	84.5
22	3150.	86.0	85.2	84.2	85.3	85.8	84.9
23	4000.	85.0	82.8	81.6	83.1	83.2	83.2
24	5000.	84.8	82.9	81.0	82.8	82.7	80.5
25	6300.	85.3	83.3	79.8	82.4	82.1	81.1
26	8000.	84.1	81.4	77.1	81.5	80.6	81.1
27	10000.	86.4	82.7	75.7	81.1	80.4	80.4
28	12500.	87.4	82.5	73.4	79.7	78.2	77.8
29	16000.	87.0	82.1	71.7	78.9	76.7	76.4

FOLDOUT FRAME 1

OASPL

107.2 106.2 107.2 108.3 109.7 107.7

243

ORIGINAL PAGE IS  
OF POOR QUALITY

FEED = 3150. RPM

PERCENT SPEED 86.0

FGH 16240

HUMIDITY = .74.0 PC

BAROMETER = 29.48 IN HG

XMH .396

C-6

UT FRAME /

FOLDOUT FRAME S.S. 89

2

243

DATA OF 1211. SUBSET NO. 89. READINGS 165 166 167

SIX DECIBELS HAVE BEEN SUBTRACTED FROM THE ORIGINAL DATA.

QCSEE DTW ENGINE

BELLMOUTH HARDWALL INLET

HARD CORE, NO SPLITTER

ENGINE WITH APPROACH FLAPS

SPL LOSSLESS ARRAY

ORIGINAL PAGE IS  
OF POOR QUALITY

FLYOVER PLANE

DATA AT 100.0 FT RADIUS WITH NO ATMOSPHER  
(FOR POWER AND DIRECTIVITY COMPUTA

ANGLE, $\theta$		0.	30.	40.	50.	60.	70.	80.	90.	100.	140.	150.
COMPUTED DASPL		109.8	113.2	110.8	111.1	110.7	111.3	110.8	112.0	112.5	114.7	119
BAND FREQUENCY												
1	25	96.7	101.8	100.8	101.3	100.8	102.2	100.2	99.2	100.8	105.5	105
2	32	98.2	103.8	102.7	104.0	103.0	102.3	100.8	102.7	103.7	103.7	108
3	40	102.2	107.0	102.3	102.7	103.0	100.5	102.0	102.0	104.2	106.7	111
4	50	101.0	105.3	102.0	101.3	99.0	101.5	102.5	105.2	105.8	108.2	113
5	63	99.7	103.8	98.5	98.0	98.2	101.8	102.3	102.3	103.8	104.2	111
6	80	99.2	99.3	96.3	97.7	98.8	102.0	99.8	100.8	101.3	104.0	110
7	100	95.5	95.0	97.3	99.5	99.3	100.0	98.0	99.0	99.5	99.7	107
8	125	96.2	96.9	99.2	99.9	96.9	98.4	97.4	98.9	98.0	99.2	105
9	160	92.4	98.0	96.2	94.4	95.9	96.7	96.4	98.0	98.0	101.0	101
10	200	91.4	95.0	92.0	94.7	94.7	96.0	96.0	98.4	97.4	99.8	100
11	250	90.0	91.5	92.2	92.9	93.7	94.7	96.2	97.4	94.5	100.3	98
12	315	89.4	92.4	90.7	92.4	92.7	94.4	94.7	96.9	93.2	99.3	96
13	400	87.6	90.2	89.2	89.7	91.2	92.6	95.2	95.0	92.9	95.6	96
14	500	86.6	87.9	87.9	88.9	90.7	91.6	92.6	94.4	90.6	94.4	94
15	630	85.9	87.6	87.6	88.9	89.3	90.9	90.9	93.6	89.3	92.9	93
16	800	86.0	87.1	86.6	88.1	89.1	90.3	87.5	86.0	88.3	89.1	91
17	1000	85.6	87.4	86.6	87.4	87.9	89.2	87.6	82.4	86.4	88.7	91
18	1250	87.8	90.0	90.2	89.0	89.7	89.2	87.3	88.7	84.3	86.0	89
19	1600	95.3	98.7	99.2	96.8	98.5	96.8	91.3	93.0	87.8	87.0	91
20	2000	88.7	91.1	89.4	88.7	88.0	87.4	82.2	82.5	82.1	83.7	89
21	2500	91.0	92.7	90.2	89.7	88.2	87.2	81.2	76.1	77.3	82.1	84
22	3150	94.6	97.1	94.9	93.7	91.7	89.5	83.7	75.0	77.4	81.2	85
23	4000	91.0	92.7	90.5	90.0	86.8	82.4	73.7	72.0	72.0	80.2	81
24	5000	94.3	95.6	92.5	91.8	88.8	82.8	73.1	73.1	73.1	78.7	81
25	6300	94.8	95.2	91.7	88.0	85.8	82.6	74.5	74.5	74.5	78.4	77
26	8000	93.5	92.3	89.6	82.2	81.1	80.1	76.1	76.1	76.8	76.7	76
27	10000	94.2	91.8	88.4	77.7	78.6	78.4	77.8	77.8	77.8	77.8	77
28	12500	91.7	83.5	86.5	79.6	79.6	79.6	79.6	79.6	79.6	79.6	79
29	16000	88.3	81.2	84.6	81.4	81.4	81.4	81.4	81.4	81.4	81.4	81

244

FOLDOUT FRAME

FROM THE ORIGINAL DATA.

CONFIGURATION NO 100  
SPEED = 3150. RPM  
PERCENT SPEED = 86.0

D S S L E S S A R R A Y

RADIUS WITH NO ATMOSPHERIC ATTENUATION  
AND DIRECTIVITY COMPUTATIONS)

ORIGINAL PAGE IS  
OF POOR QUALITY

80.	90.	100.	140.	150.	160.	180.
0.8	112.0	112.5	114.7	119.4	122.5	119.2
0.2	99.2	100.8	105.5	105.3	107.7	104.8
0.8	102.7	103.7	103.7	108.3	112.3	107.2
2.0	102.0	104.2	106.7	111.2	116.0	111.3
2.5	105.2	105.8	108.2	113.5	113.8	112.8
2.3	102.3	103.8	104.2	111.8	114.8	110.5
9.8	100.8	101.3	104.0	110.8	113.3	110.5
8.0	99.0	99.5	99.7	107.5	111.7	106.3
7.4	98.9	98.0	99.2	105.5	108.4	105.4
6.4	98.0	98.0	101.0	101.9	107.4	104.9
6.0	98.4	97.4	99.8	100.5	106.5	104.9
6.2	97.4	94.5	100.3	98.9	103.9	102.4
4.7	96.9	93.2	99.3	96.4	101.9	101.9
5.2	95.0	92.9	95.6	96.4	101.2	99.4
2.6	94.4	90.6	94.4	94.2	98.4	98.1
0.9	93.6	89.3	92.9	93.1	97.1	96.8
7.5	86.0	88.3	89.1	91.8	95.3	95.1
7.6	82.4	86.4	88.7	91.4	93.7	94.5
7.3	88.7	84.3	86.0	89.3	91.8	93.2
1.3	93.0	87.8	87.0	91.5	93.3	92.3
2.2	82.5	82.1	83.7	89.4	90.4	90.2
1.2	76.1	77.3	82.1	84.5	86.3	89.1
3.7	75.0	77.4	81.2	85.0	87.0	87.4
3.7	72.0	72.0	80.2	81.7	83.1	85.0
3.1	73.1	73.1	78.7	81.4	83.1	83.2
4.5	74.5	74.5	78.4	77.9	84.5	80.0
5.1	76.1	76.8	76.7	76.0	86.1	76.0
7.8	77.8	77.8	77.8	77.8	87.8	77.8
9.6	79.6	79.6	79.6	79.8	89.6	79.6
1.4	81.4	81.4	81.4	81.4	91.4	81.4

244



# SPL LOSSLESS DATA AT 100 FOOT RADIUS

QCSEE OTW ENGINE

BELLMOUTH HARDWALL INLET

HARD CORE, NO SPLITTER

ENGINE WITH APPROACH FLAPS

READING NUMBERS = 168 169 170

CONFIGURATION NO = 100

SPEED = 3297. RPM

TEMPERATURE = 26.0 F

RELATIVE HUMIDITY = 74.0 PC

*SIDELINE PLANE*

BOOM MICROPHONES - LOSSLESS DATA

MIC #	14	15	16	17	18	19
R	0.	17.	31.	43.	54.	35.
THETA, $\theta_s$	90.	90.	90.	90.	90.	<del>90.</del> 120
Z	106.	98.	91.	86.	81.	65.
DISTANCE	91.	85.	82.	83.	86.	61.
PHI, $\phi$	0.	11.	22.	31.	39.	35.

INDEX	FREQ						
1	25.	91.6	93.4	94.3	95.0	99.0	99.4
2	32.	91.8	94.2	96.1	99.2	101.3	102.0
3	40.	93.5	96.7	98.8	98.2	101.7	99.5
4	50.	98.3	99.2	100.1	98.5	100.7	100.5
5	63.	97.5	98.6	98.6	97.4	99.7	99.9
6	80.	96.8	96.7	97.9	97.5	100.2	99.9
7	100.	96.3	95.6	95.6	97.0	98.3	98.7
8	125.	96.5	96.2	96.9	98.2	99.5	99.9
9	160.	95.8	94.9	95.6	97.7	98.2	97.1
10	200.	95.0	94.7	96.6	97.5	99.2	97.6
11	250.	94.3	94.6	95.6	96.4	97.8	97.1
12	315.	93.8	93.6	95.8	96.0	98.0	95.7
13	400.	94.0	92.4	94.4	95.2	96.7	94.6
14	500.	93.0	92.4	93.6	94.7	95.5	94.4
15	630.	92.2	90.8	92.3	93.4	94.2	93.1
16	800.	92.2	90.8	92.2	92.8	93.1	92.3
17	1000.	91.4	89.8	91.0	91.6	92.1	91.8
18	1250.	89.7	88.6	89.3	89.9	90.3	90.2
19	1600.	96.8	92.2	91.4	92.0	95.3	91.1
20	2000.	86.9	86.1	86.5	87.6	87.9	87.2
21	2500.	86.5	85.4	85.5	86.5	87.0	86.3
22	3150.	86.9	86.2	84.7	86.6	86.3	86.7
23	4000.	86.5	84.8	83.1	85.1	84.9	84.9
24	5000.	86.2	83.9	82.2	84.3	84.0	82.0
25	6300.	86.8	84.9	80.9	83.9	83.6	82.1
26	8000.	85.3	82.9	78.8	83.0	81.5	82.6
27	10000.	86.9	83.6	77.1	82.2	81.4	81.7
28	12500.	88.1	84.2	74.5	81.2	79.2	79.3
29	16000.	87.6	83.4	72.7	80.0	78.1	78.0

FOLDOUT FRAME

CASPL

108.0 107.8 108.8 109.3 111.2 110.7

ET

APS

170

SPEED = 3297. RPM

PERCENT SPEED

90.0

FGK 17822

ATIVE HUMIDITY = 74.0 PC

BAROMETER = 29.47 IN HG

XM .420

TA

120

FOLDOUT FRAME

2

S.S. 90

245

DATA OF 1211. SUBSET NO. 90. READINGS 168 169 170

SIX DECIBELS HAVE BEEN SUBTRACTED FROM THE ORIGINAL DATA.

QCSEE OTW ENGINE

BELLMOUTH HARDWALL INLET

HARD CORE, NO SPLITTER

ENGINE WITH APPROACH FLAPS

ORIGINAL PAGE IS  
OF POOR QUALITY

SPL LOSSLESS ARRAY

FLYOVER PLANE DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERE  
(FOR POWER AND DIRECTIVITY COMPUTA

ANGLE  $\theta$  0. 30. 40. 50. 60. 70. 80. 90. 100. 140. 15

COMPUTED DASPL 111.4 111.5 112.0 112.2 112.3 112.4 112.6 113.6 113.6 118.4 120

BAND FREQUENCY

1	25	97.8	98.2	101.7	103.7	102.8	101.5	101.8	103.0	101.3	108.3	104
2	32	99.0	102.2	102.2	103.5	103.8	103.2	101.8	103.2	102.9	111.0	107
3	40	101.5	103.2	105.5	103.8	103.5	103.5	102.3	104.2	106.2	109.8	111
4	50	103.2	104.2	103.2	102.5	102.5	101.7	103.8	106.3	107.3	112.8	115
5	63	102.5	101.0	101.0	100.2	99.7	102.5	104.0	103.7	104.0	109.0	113
6	80	99.8	98.8	96.5	99.0	103.5	103.3	102.7	102.2	102.2	106.0	111
7	100	97.0	94.8	98.0	100.3	101.5	100.7	101.2	101.5	101.2	103.5	108
8	125	97.9	96.4	99.9	100.4	98.0	99.9	99.9	101.4	101.5	104.5	106
9	160	95.4	97.9	98.0	96.0	97.0	97.9	99.0	100.0	99.0	100.0	103
10	200	93.9	96.0	93.7	95.7	96.0	96.4	98.0	100.4	97.9	97.8	102
11	250	90.5	92.7	94.0	95.4	95.4	96.2	98.2	99.0	96.5	97.0	100
12	315	90.9	93.5	93.5	94.4	94.0	96.0	96.0	97.9	95.9	95.5	98
13	400	89.1	92.4	91.7	92.4	92.9	94.7	97.1	97.6	94.7	93.8	97
14	500	88.1	89.2	90.1	91.4	92.1	93.9	94.2	96.1	93.6	92.8	96
15	630	87.6	89.6	89.9	91.1	91.1	94.1	93.8	95.4	91.4	93.9	94
16	800	86.0	88.5	88.8	91.1	90.5	92.5	89.6	88.0	90.1	96.1	93
17	1000	88.9	89.4	89.6	92.2	91.2	93.2	90.2	84.9	88.9	89.4	92
18	1250	89.9	89.0	88.8	90.3	89.8	91.3	89.7	90.2	86.5	88.0	90
19	1600	102.0	99.8	98.0	98.5	97.5	98.0	94.2	94.0	92.3	91.3	93
20	2000	91.4	90.9	89.4	89.9	89.6	89.9	84.7	84.9	84.5	86.7	91
21	2500	92.0	91.3	91.2	91.8	90.8	91.0	84.5	78.9	78.9	84.3	86
22	3150	95.7	94.7	93.7	93.6	91.5	89.8	82.3	76.7	78.7	83.2	87
23	4000	93.7	92.2	91.7	91.0	88.0	83.9	76.1	72.0	72.0	83.0	84
24	5000	95.6	94.3	93.4	90.9	88.1	82.2	73.1	73.1	73.1	83.8	84
25	6300	94.9	93.6	91.9	87.6	85.2	82.1	74.5	74.5	74.5	84.8	84
26	8000	94.0	90.6	90.0	80.7	80.4	80.0	76.1	76.1	76.1	86.1	86
27	10000	94.1	88.9	88.4	77.9	77.9	78.6	77.8	77.8	77.8	87.8	87
28	12500	91.6	81.0	86.5	79.6	79.6	79.6	79.6	79.6	79.6	89.6	89
29	16000	88.4	81.3	84.6	81.4	81.4	81.4	81.4	81.4	81.4	91.4	91

246

FOLDOUT FRAME

169 170

ED FROM THE ORIGINAL DATA.

CONFIGURATION NO 100

SPEED = 3297. RPM

PERCENT SPEED = 90.0

LOSSLESS ARRAY

0 FT RADIUS WITH NO ATMOSPHERIC ATTENUATION  
POWER AND DIRECTIVITY COMPUTATIONS)

ORIGINAL PAGE IS  
OF POOR QUALITY

90. 90. 100. 140. 150. 160. 180.

4 112.6 113.6 113.6 118.4 120.4 122.6 120.9

5 101.8 103.0 101.3 108.3 104.3 104.7 105.0

2 101.8 103.2 102.9 111.0 107.2 109.7 108.0

5 102.3 104.2 106.2 109.8 111.7 112.2 111.7

7 103.8 106.3 107.3 112.8 115.3 115.8 114.3

5 104.0 103.7 104.0 109.0 113.0 115.2 113.0

3 102.7 102.2 102.2 106.0 111.5 114.5 112.2

7 101.2 101.5 101.2 103.5 108.8 111.8 109.5

9 99.9 101.4 101.5 104.5 106.0 109.9 107.7

9 99.0 100.0 99.0 100.0 103.0 109.2 107.2

4 98.0 100.4 97.9 97.8 102.5 107.7 106.9

2 98.2 99.0 96.5 97.0 100.0 105.9 104.9

0 96.0 97.9 95.9 95.5 98.2 103.4 104.7

7 97.1 97.6 94.7 93.8 97.7 103.1 101.6

9 94.2 96.1 93.6 92.8 96.2 100.2 100.2

1 93.8 95.4 91.4 93.9 94.4 98.6 98.8

5 89.6 88.0 90.1 96.1 93.8 97.1 97.0

2 90.2 84.9 88.9 89.4 92.9 96.0 96.2

2 89.7 90.2 86.5 88.0 90.8 93.7 94.7

0 94.2 94.0 92.3 91.3 93.0 94.8 93.7

9 84.7 84.9 84.5 86.7 91.2 92.7 92.1

0 84.5 78.9 78.9 84.3 86.6 88.5 90.6

8 82.3 76.7 78.7 83.2 87.5 89.0 88.5

9 76.1 72.0 72.0 83.0 84.5 85.8 86.3

2 73.1 73.1 73.1 83.8 84.1 85.4 84.1

1 74.5 74.5 74.5 84.8 84.5 84.6 84.5

0 76.1 76.1 76.1 86.1 86.1 86.1 86.1

5 77.8 77.8 77.8 87.8 87.8 87.8 87.8

5 79.6 79.6 79.6 89.6 89.6 89.6 89.6

4 81.4 81.4 81.4 91.4 91.4 91.4 91.4

246

FOLDOUT FRAME 2

# SPL LOSSLESS DATA AT 100 FOOT RADIUS

QCSEE OTW ENGINE

BELLMOUTH HARDWALL INLET

HARD CORE, NO SPLITTER

ENGINE WITH APPROACH FLAPS

READING NUMBERS = 171 172 173

CONFIGURATION NO = 100

SPEED = 3571. RPM

TEMPERATURE = 31.0 F

RELATIVE HUMIDITY = 75.0 PC

*SIDELINE PLANE*

BCOM MICROPHONES - LOSSLESS DATA

MIC # 14 15 16 17 18 19

R 0. 17. 31. 43. 54. 35.

THETA,  $\theta_s$  90. 90. 90. 90. 90. ~~90~~ 120

Z 106. 98. 91. 86. 81. 65.

DISTANCE 91. 85. 82. 83. 86. 61.

PHI,  $\phi$  0. 11. 22. 31. 39. 35.

INDEX FREQ

1	25.	94.1	97.0	96.4	97.5	100.3	97.7
2	32.	96.5	97.4	99.4	100.2	102.8	98.2
3	40.	98.8	99.4	99.6	99.7	104.5	99.4
4	50.	100.8	101.4	101.4	102.0	103.8	101.7
5	63.	100.5	100.7	100.1	101.9	101.8	102.9
6	80.	100.5	100.4	99.8	101.0	102.2	103.5
7	100.	99.0	98.1	99.3	99.9	102.5	100.5
8	125.	98.8	97.7	100.1	101.7	102.2	100.2
9	160.	98.3	98.6	99.1	100.9	101.5	100.2
10	200.	98.0	97.6	99.1	100.4	102.5	99.2
11	250.	96.8	97.4	98.8	100.4	101.3	99.1
12	315.	96.8	97.2	98.1	99.5	101.3	97.9
13	400.	97.2	96.6	97.4	98.9	100.7	97.2
14	500.	96.3	96.6	97.3	98.2	99.4	96.4
15	630.	97.9	97.9	98.5	97.4	99.4	97.1
16	800.	98.1	96.3	96.8	97.9	99.1	95.6
17	1000.	95.6	96.3	96.4	98.1	96.9	96.0
18	1250.	94.5	94.4	94.7	96.7	96.3	93.7
19	1600.	96.2	93.8	93.3	96.6	96.6	93.4
20	2000.	91.5	90.6	90.9	92.9	93.0	91.1
21	2500.	90.4	90.1	89.8	90.7	91.7	90.3
22	3150.	89.9	88.5	87.5	89.5	90.5	89.6
23	4000.	88.8	87.9	86.1	88.1	88.4	87.9
24	5000.	88.6	87.1	85.0	87.5	87.0	84.9
25	6300.	88.6	87.3	83.6	86.8	86.5	84.8
26	8000.	87.1	84.9	80.9	85.6	84.5	85.1
27	10000.	87.8	85.5	79.0	84.5	84.0	84.4
28	12500.	89.0	85.6	76.4	82.9	81.4	80.9
29	16000.	88.7	85.3	77.9	82.2	80.4	80.6

OASPL

111.1 111.0 111.5 112.7 114.2 112.2

FOLDOUT-FRAME

PS

173

SPEED = 3571. RPM

PERCENT SPEED

97.0

FGK 21093

VE HUMIDITY = 75.0 PC

BAROMETER = 29.41 IN HG

XMH .459

20

5.5.91

247

FOLDOUT FRAME 2

DATA OF 1211. SUBSET NO. 91. READINGS 171 172 173

SIX DECIBELS HAVE BEEN SUBTRACTED FROM THE ORIGINAL DATA.

QCSEE OTW ENGINE

BELLMOUTH HARDWALL INLET

HARD CORE, NO SPLITTER

ENGINE WITH APPROACH FLAPS

ORIGINAL PAGE IS  
OF POOR QUALITY

SPL LOSSLESS ARRAY

FLYOVER PLANE DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERIC  
(FOR POWER AND DIRECTIVITY COMPUTATION)

ANGLE  $\theta$  0. 30. 40. 50. 60. 70. 80. 90. 100. 140. 150.

COMPUTED OASPL 112.3 112.7 113.9 114.0 116.6 116.5 116.0 116.7 116.9 117.7 124.0

BAND FREQUENCY

1	25	98.2	100.8	100.8	101.8	103.3	102.7	103.8	104.5	103.8	107.5	113.3
2	32	102.0	102.8	104.7	104.7	106.7	105.2	104.7	105.7	106.8	107.5	114.0
3	40	102.7	105.2	105.2	105.8	106.0	104.0	105.3	108.0	108.9	108.8	116.0
4	50	103.3	105.5	106.3	105.0	105.2	104.8	106.5	107.8	110.0	111.0	117.0
5	63	103.8	103.0	101.8	101.2	103.5	107.3	107.5	107.3	108.8	108.7	117.0
6	80	102.3	101.0	99.5	101.3	105.8	107.2	106.2	106.3	106.7	107.3	115.0
7	100	100.2	96.0	100.8	103.0	104.2	104.2	104.5	103.8	103.3	104.3	111.0
8	125	99.5	98.7	103.2	102.9	102.7	104.4	104.0	103.9	103.0	103.7	109.0
9	160	96.7	100.9	100.9	98.0	101.7	101.4	102.2	104.0	101.9	102.2	106.0
10	200	95.5	97.4	96.4	98.0	100.4	101.0	102.2	103.5	101.4	102.7	104.0
11	250	93.2	94.0	97.2	97.0	99.0	100.0	101.4	102.5	98.9	101.7	104.0
12	315	93.5	95.7	95.9	95.9	98.5	99.0	100.2	101.0	98.2	99.5	101.0
13	400	91.7	94.4	94.4	95.1	97.1	98.2	101.2	99.7	97.2	98.9	101.0
14	500	91.4	92.1	94.2	93.9	96.6	97.4	97.1	98.2	96.2	97.4	99.0
15	630	95.8	93.1	96.6	99.4	101.6	100.6	97.6	97.9	95.3	96.6	98.0
16	800	93.5	91.3	97.0	99.3	101.8	100.8	98.1	93.3	94.8	94.8	97.0
17	1000	92.7	91.2	95.2	99.4	104.5	105.0	100.0	101.9	95.9	93.0	96.0
18	1250	91.5	89.4	93.5	97.8	103.3	102.4	97.9	99.4	92.8	90.6	94.0
19	1600	99.6	94.6	99.9	96.2	107.2	104.9	97.2	92.9	96.1	93.9	95.0
20	2000	93.8	90.1	94.3	91.8	100.9	98.8	92.9	90.6	90.1	92.6	94.0
21	2500	92.0	90.0	92.5	92.5	98.6	97.3	89.6	88.6	84.4	89.3	89.0
22	3150	95.0	90.3	93.1	91.9	95.6	92.4	86.6	80.4	81.4	88.1	89.0
23	4000	92.3	88.8	91.5	90.5	94.3	88.5	80.9	73.9	74.8	88.2	87.0
24	5000	91.6	88.2	91.9	89.5	92.4	86.4	75.6	72.8	73.8	86.4	86.0
25	6300	91.5	84.8	91.5	86.3	90.6	86.8	74.2	74.3	75.1	84.9	84.0
26	8000	90.2	82.4	89.1	80.0	87.0	85.3	76.1	76.1	76.1	82.1	86.0
27	10000	90.2	80.4	88.2	78.3	84.1	83.1	78.4	78.4	78.4	80.4	88.0
28	12500	87.4	80.8	86.5	80.9	80.7	80.7	80.9	80.9	80.9	80.8	90.0
29	16000	85.6	83.6	85.7	83.6	83.6	83.6	83.6	83.6	83.6	83.6	93.0

248

FOLDOUT FRAME /

D FROM THE ORIGINAL DATA.

CONFIGURATION NO 100

SPEED = 3571. RPM

PERCENT SPEED = 97.0

LOSSLESS ARRAY

FT RADIUS WITH NO ATMOSPHERIC ATTENUATION  
(POWER AND DIRECTIVITY COMPUTATIONS)ORIGINAL PAGE IS  
OF POOR QUALITY

80. 90. 100. 140. 150. 160. 180.

116.0 116.7 116.9 117.7 124.6 125.2 123.4

103.8	104.5	103.8	107.5	113.3	106.0	107.0
104.7	105.7	106.8	107.5	114.2	109.7	109.5
105.3	108.0	108.9	108.8	116.7	114.3	113.3
106.5	107.8	110.0	111.0	117.3	117.3	116.0
107.5	107.3	108.8	108.7	117.8	118.0	116.2
106.2	106.3	106.7	107.3	115.5	117.3	113.8
104.5	103.8	103.3	104.3	111.5	115.3	111.8
104.0	103.9	103.0	103.7	109.7	113.4	111.2
102.2	104.0	101.9	102.2	106.9	111.9	109.7
102.2	103.5	101.4	102.7	104.9	112.0	110.9
101.4	102.5	98.9	101.7	104.4	110.0	108.5
100.2	101.0	98.2	99.5	101.7	107.7	107.7
101.2	99.7	97.2	98.9	101.4	106.9	105.9
97.1	98.2	96.2	97.4	99.4	104.6	103.2
97.6	97.9	95.3	96.6	98.6	102.3	102.3
98.1	93.3	94.8	94.8	97.3	101.0	101.1
100.0	101.9	95.9	93.0	96.2	98.9	99.5
97.9	99.4	92.8	90.6	94.4	96.4	98.4
97.2	92.9	96.1	93.9	95.4	97.3	96.9
92.9	90.6	90.1	92.6	94.3	97.1	95.5
89.6	88.6	84.4	89.3	89.3	91.8	94.4
86.6	80.4	81.4	88.1	89.6	92.8	91.9
80.9	73.9	74.8	88.2	87.7	89.7	89.8
75.6	72.8	73.8	86.4	86.9	88.7	87.2
74.2	74.3	75.1	84.9	84.2	86.1	84.5
76.1	76.1	76.1	82.1	86.1	86.1	86.1
78.4	78.4	78.4	80.4	88.4	88.4	88.4
80.9	80.9	80.9	80.8	90.9	90.9	90.9
83.6	83.6	83.6	83.6	93.6	93.6	93.6

248

FOLDOUT FRAME

2



SPL

LOSSLESS DATA AT 100 FOOT RADIUS

QCSEE OTW ENGINE

ORIGINAL PAGE IS  
OF POOR QUALITY

BELLMOUTH HARDWALL INLET

HARD CORE, NO SPLITTER

ENGINE WITH APPROACH FLAPS

READING NUMBERS = 174 175 176

CONFIGURATION NO = 100

SPEED = 2393. RPM

TEMPERATURE = 31.0 F

RELATIVE HUMIDITY = 73.0 PC

SIDELINE PLANE

ROOM MICROPHONES - LOSSLESS DATA

MIC # 14 15 16 17 18 19

R 0. 17. 31. 43. 54. 35.

THETA,  $\theta_s$  90. 90. 90. 90. 90. ~~90~~ 120

Z 106. 98. 91. 86. 81. 65.

DISTANCE 91. 85. 82. 83. 86. 61.

PHI,  $\phi$  0. 11. 22. 31. 39. 35.

INDEX FREQ

1	25.	86.8	85.9	88.3	88.8	96.2	86.2
2	32.	87.6	87.4	90.4	89.7	94.2	88.0
3	40.	88.0	87.2	89.4	89.2	93.2	88.0
4	50.	88.0	87.9	90.3	92.0	94.0	90.5
5	63.	88.0	89.1	89.6	88.4	90.5	89.7
6	80.	87.8	88.4	88.3	87.7	90.0	89.7
7	100.	87.0	85.7	86.8	88.0	89.5	88.7
8	125.	85.8	86.1	85.6	87.2	88.0	87.6
9	160.	85.3	84.1	85.6	86.9	88.0	86.6
10	200.	85.0	84.1	85.8	86.4	88.8	86.7
11	250.	85.8	85.6	85.4	86.4	87.8	86.6
12	315.	84.5	82.7	84.4	85.4	86.7	84.6
13	400.	82.7	81.7	82.4	82.9	84.9	83.6
14	500.	81.8	81.4	81.6	82.1	83.9	82.6
15	630.	82.0	80.4	80.8	81.2	82.4	82.2
16	800.	81.9	80.0	80.2	80.9	82.4	81.9
17	1000.	82.1	79.8	80.4	80.3	81.8	82.0
18	1250.	82.0	79.9	80.7	79.7	81.0	81.0
19	1600.	78.4	76.4	76.5	77.4	78.1	77.9
20	2000.	78.0	76.2	76.4	77.0	77.7	77.0
21	2500.	79.2	77.6	76.5	77.6	77.6	77.1
22	3150.	78.4	75.1	74.7	75.5	76.3	76.3
23	4000.	78.0	74.7	73.6	74.8	74.9	75.0
24	5000.	78.3	74.5	72.6	74.0	73.4	72.9
25	6300.	80.1	77.0	73.0	75.5	74.6	73.9
26	8000.	81.9	77.3	72.2	76.0	74.1	76.3
27	10000.	83.2	78.7	71.7	76.9	75.7	76.3
28	12500.	84.8	79.7	70.0	76.4	73.9	74.1
29	16000.	82.9	77.6	66.7	73.7	71.3	71.8

OASPL

99.1 98.2 99.3 99.8 102.8 99.6

FOLDOUT FRAME

ORIGINAL PAGE IS  
OF POOR QUALITY

176

SPEED = 2393. RPM

PERCENT SPEED 65.0

FGK 8705

VE HUMIDITY = 73.0 PC

BAROMETER = 29.41 IN HG

XMH .291

0

SS. 92

249

FOLDOUT FRAME

2

DATA OF 1211. SUBSET NO. 92. READINGS 174 175 176

SIX DECIBELS HAVE BEEN SUBTRACTED FROM THE ORIGINAL DATA.

QCSEE OTW ENGINE

BELLMOUTH HARDWALL INLET

HARD CORE, NO SPLITTER

ENGINE WITH APPROACH FLAPS

ORIGINAL PAGE IS  
OF POOR QUALITY

SPL

LOSSLESS ARRAY

FLYOVER PLANE DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERIC  
(FOR POWER AND DIRECTIVITY COMPUTATIONS)

ANGLE,  $\theta$  0. 30. 40. 50. 60. 70. 80. 90. 100. 140. 180.

COMPUTED DASPL 104.1 103.2 104.3 102.8 102.7 102.8 101.4 101.9 102.2 104.8 107.1

BAND FREQUENCY

		0.	30.	40.	50.	60.	70.	80.	90.	100.	140.	180.
1	25	93.3	94.3	96.3	94.2	96.5	96.8	94.7	96.3	94.5	96.7	96.7
2	32	90.7	94.2	97.2	95.0	93.7	96.2	93.8	91.8	93.3	97.8	99.8
3	40	92.5	94.2	96.2	93.8	93.3	91.7	90.2	91.3	93.7	97.7	100.7
4	50	92.5	93.5	95.7	91.0	90.7	92.5	92.3	93.8	94.7	97.7	101.7
5	63	91.8	90.5	99.5	88.2	88.0	90.7	90.5	90.0	91.2	93.8	96.8
6	80	91.0	87.3	85.3	87.7	89.7	90.8	89.2	89.5	89.8	92.7	99.7
7	100	88.0	87.5	88.3	89.3	90.3	88.8	89.0	87.8	89.0	88.8	99.7
8	125	86.4	87.2	89.0	89.0	86.5	87.7	87.0	86.9	88.2	87.0	99.7
9	160	84.7	87.0	86.9	84.0	85.5	85.9	85.7	86.5	87.2	85.0	87.7
10	200	85.5	86.2	84.2	84.2	85.5	85.5	86.2	87.9	87.9	85.7	85.7
11	250	86.0	83.9	85.2	83.4	84.5	86.0	87.0	86.5	86.9	84.2	85.7
12	315	83.0	84.0	82.4	81.7	82.5	84.0	84.5	85.4	84.7	82.5	82.5
13	400	80.4	81.9	80.4	80.1	80.9	81.4	83.6	84.2	82.7	81.9	82.7
14	500	79.4	79.2	78.4	78.7	79.4	80.4	79.2	82.7	81.2	81.4	80.7
15	630	79.1	78.6	78.8	78.4	78.8	79.3	78.6	80.1	79.6	79.4	79.4
16	800	80.6	80.1	80.1	79.5	79.0	79.8	79.1	75.3	79.3	78.6	80.7
17	1000	86.4	87.0	87.5	87.0	84.9	82.0	80.2	82.0	78.0	76.0	80.7
18	1250	89.8	90.5	90.8	90.6	87.8	84.9	80.8	82.9	76.4	75.1	80.7
19	1600	88.1	87.6	86.3	84.8	82.8	80.8	74.8	74.6	75.9	76.3	79.7
20	2000	87.7	88.2	87.5	87.3	86.0	82.2	77.2	76.2	74.1	75.1	79.7
21	2500	88.8	88.5	89.0	89.7	88.3	83.1	75.1	75.3	70.5	73.0	79.7
22	3150	86.5	85.6	86.5	87.5	85.6	80.3	72.1	65.2	67.6	73.7	79.7
23	4000	85.2	84.4	85.2	86.2	84.7	76.9	67.8	62.4	61.7	73.4	79.7
24	5000	85.8	83.3	85.5	86.3	83.5	74.8	62.8	62.9	62.9	74.2	79.7
25	6300	91.0	84.7	86.8	85.0	82.4	77.3	64.3	64.3	64.3	74.4	79.7
26	8000	96.8	87.2	87.1	77.8	80.5	76.5	66.2	66.2	66.2	74.9	69.7
27	10000	91.9	88.7	92.5	75.1	83.4	79.6	68.4	68.4	68.4	73.5	69.7
28	12500	88.4	82.5	87.3	72.3	78.9	72.3	70.9	70.9	70.9	70.9	79.7
29	16000	87.9	72.9	85.3	74.6	72.9	73.7	73.4	73.4	73.4	73.4	79.7

250

FOLDOUT FRAME

ED FROM THE ORIGINAL DATA.

CONFIGURATION NO 100

SPEED = 2393. RPM

PERCENT SPEED = 65.0

ORIGINAL PAGE IS  
OF POOR QUALITY

LOSSLESS ARRAY

ET RADIUS WITH NO ATMOSPHERIC ATTENUATION  
POWER AND DIRECTIVITY COMPUTATIONS)

80. 90. 100. 140. 150. 160. 180.

101.4 101.9 102.2 104.8 107.2 110.2 108.6

94.7	96.3	94.5	96.7	96.7	102.2	98.8
92.8	91.8	93.3	97.8	99.5	103.0	101.7
90.2	91.3	93.7	97.7	100.8	103.0	101.3
92.3	93.8	94.7	97.7	101.0	102.5	100.7
90.5	90.0	91.2	93.8	98.0	100.0	99.7
89.2	89.5	89.8	92.7	95.3	97.7	97.2
89.0	87.8	89.0	88.8	91.3	95.8	95.5
87.0	86.9	88.2	87.0	90.4	94.5	92.0
85.7	86.5	87.2	85.0	87.2	92.9	90.2
86.2	87.9	87.9	85.7	85.9	91.7	90.4
87.0	86.5	86.9	84.2	85.4	90.2	89.0
84.5	85.4	84.7	82.5	82.0	87.7	87.4
83.6	84.2	82.7	81.9	82.1	87.6	85.1
79.2	82.7	81.2	81.4	80.4	85.6	84.2
78.6	80.1	79.6	79.4	78.6	84.3	82.3
79.1	75.3	79.3	78.6	80.1	83.5	81.8
80.2	82.0	78.0	76.0	91.0	82.2	80.7
80.8	82.9	76.4	75.1	82.0	80.8	80.1
74.8	74.6	75.9	76.3	79.1	80.6	77.9
77.2	76.2	74.1	75.1	78.0	80.3	76.6
75.1	75.3	70.5	73.0	74.6	75.1	75.3
72.1	65.2	67.6	73.7	74.5	76.3	72.3
67.8	62.4	61.7	73.4	73.9	72.7	69.7
62.8	62.9	62.9	74.2	72.6	72.5	65.9
64.3	64.3	64.3	74.4	70.7	71.7	64.4
66.2	66.2	66.2	74.9	69.9	67.8	66.2
68.4	68.4	68.4	73.5	68.8	68.4	68.4
70.9	70.9	70.9	70.9	70.9	70.9	70.9
73.4	73.4	73.4	73.4	73.4	73.4	73.6

250

FOLDOUT FRAME 2

**SPL**

LOSSLESS DATA AT 100 FOOT RADIUS

QCSEE OTW ENGINE

BELLMOUTH, HARD NACELLE

ORIGINAL PAGE IS  
OF POOR QUALITY

HARD CORE, NO SPLITTER

READING NUMBERS = 177 178 179

CONFIGURATION NO = 200

SPEED = 1801. RPM

TEMPERATURE = 40.0 F

RELATIVE HUMIDITY = 49.0 PC

**SIDELINE PLANE**

BOOM MICROPHONES - LOSSLESS DATA

MIC #	14	15	16	17	18	19
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R	0.	17.	31.	43.	54.	35.
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THETA, $\theta_s$	90.	90.	90.	90.	90.	<del>90</del> 120
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Z	106.	98.	91.	86.	81.	65.
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DISTANCE	91.	85.	82.	83.	86.	61.
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PHI, $\phi$	0.	11.	22.	31.	39.	35.
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INDEX	FREQ
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1	25.	82.5	78.4	78.9	79.2	82.8	78.9
2	32.	79.6	78.5	80.4	82.0	81.5	79.2
3	40.	79.8	78.4	81.6	81.3	83.0	79.4
4	50.	80.6	80.5	85.1	87.0	87.8	83.2
5	63.	82.3	81.9	83.3	83.9	84.8	83.2
6	80.	80.6	79.2	82.1	81.2	82.0	83.0
7	100.	80.1	79.1	79.1	78.9	81.3	80.9
8	125.	78.3	77.7	78.8	80.4	80.3	78.4
9	160.	76.3	75.6	76.9	77.7	78.8	76.9
10	200.	77.0	77.4	78.8	79.0	79.5	77.4
11	250.	79.0	76.9	77.4	77.5	77.8	77.2
12	315.	77.8	75.6	76.3	76.4	76.9	76.1
13	400.	75.8	73.9	74.6	74.9	74.7	75.6
14	500.	74.4	73.4	74.6	73.9	73.5	75.4
15	630.	76.7	74.3	74.1	73.7	73.6	74.8
16	800.	79.2	77.6	76.5	78.3	76.9	76.8
17	1000.	76.8	74.8	74.0	73.6	73.8	75.3
18	1250.	76.7	74.7	73.8	72.7	72.3	74.3
19	1600.	74.3	72.8	72.5	71.4	71.6	72.4
20	2000.	71.8	70.0	69.7	68.9	69.1	69.0
21	2500.	72.0	69.7	69.2	69.0	68.6	69.5
22	3150.	70.9	67.9	67.2	67.3	66.8	68.2
23	4000.	71.4	67.7	66.8	66.8	66.1	68.1
24	5000.	73.8	69.8	67.5	67.8	67.7	67.6
25	6300.	77.6	74.1	70.4	71.9	70.8	72.0
26	8000.	75.6	72.2	68.8	71.3	70.4	71.2
27	10000.	78.2	74.2	68.3	71.4	71.4	71.8
28	12500.	84.7	79.5	69.7	74.2	72.6	76.0
29	16000.	77.9	72.6	63.0	67.8	66.6	69.5

OASPL

93.2	91.2	92.2	93.0	93.8	92.1
------	------	------	------	------	------

FOLDOUT FRAME

ORIGINAL PAGE IS  
OF POOR QUALITY

179

SPEED = 1801. RPM

PERCENT SPEED

47.0

FEK 4573

ATIVE HUMIDITY = 49.0 PC

BAROMETER = 29.16 IN HG

XMM 200

TA

20

S.S. 93

251

FOLDOUT FRAME 2

DATA OF 1218. SUBSET NO. 93. READINGS 177 178 179

SIX DECIBELS HAVE BEEN SUBTRACTED FROM THE ORIGINAL DATA.  
 QCSEE OTW ENGINE  
 BELLMOUTH, HARD NACELLE  
 HARD CORE, NO SPLITTER

ORIGINAL PAGE IS  
 OF POOR QUALITY

SPL LOSSLESS ARRAY

FLYOVER PLANE DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERIC  
 (FOR POWER AND DIRECTIVITY COMPUTATION)

ANGLE, $\theta$		0.	30.	40.	50.	60.	70.	80.	90.	100.	110.	120.
COMPUTED OASPL		102.0	98.8	98.7	96.9	96.1	94.7	93.1	93.5	93.2	94.1	93.0
BAND FREQUENCY												
1	25	76.2	82.8	84.8	84.7	85.8	86.3	85.7	86.5	84.3	85.7	83.0
2	32	75.7	81.5	85.7	84.3	86.5	86.2	84.3	84.7	83.2	83.3	82.0
3	40	77.0	84.3	84.2	87.0	85.3	83.3	82.7	82.3	82.7	84.2	83.0
4	50	79.8	85.3	86.3	85.3	84.3	84.2	83.8	85.5	86.3	87.2	86.0
5	63	82.2	84.3	85.3	84.5	82.7	82.5	84.3	84.8	84.3	84.8	84.0
6	80	79.3	82.7	81.5	79.5	79.2	82.2	82.2	80.7	83.0	83.2	82.0
7	100	80.7	81.5	79.8	78.2	80.2	81.8	79.2	79.3	80.2	80.5	79.0
8	125	80.0	78.5	79.2	78.7	79.9	79.5	78.7	78.2	78.5	80.4	81.0
9	160	78.4	76.5	78.5	78.0	77.7	78.2	77.4	77.4	76.7	77.7	78.0
10	200	83.2	78.0	79.4	78.2	77.0	78.7	76.5	77.4	76.7	78.5	78.0
11	250	78.5	76.9	77.4	75.5	74.5	76.5	77.5	76.7	76.5	77.2	76.0
12	315	76.2	76.9	75.7	75.1	74.6	75.7	75.7	76.6	74.7	76.6	76.0
13	400	74.4	74.9	74.2	73.7	73.7	73.6	71.4	73.4	71.9	75.1	76.0
14	500	74.8	75.1	74.8	73.1	72.3	72.1	71.1	72.6	72.1	74.8	75.0
15	630	76.1	77.3	75.8	75.1	73.0	72.9	70.3	70.3	71.8	74.3	76.0
16	800	89.8	87.7	85.3	85.3	82.0	79.7	76.7	68.7	75.3	75.2	77.0
17	1000	81.7	82.1	80.1	80.2	77.1	75.1	72.1	69.4	70.7	71.7	75.0
18	1250	82.2	83.3	81.8	80.5	77.5	74.7	71.0	73.0	70.5	71.2	74.0
19	1600	84.3	85.0	86.5	84.0	82.2	78.3	72.8	72.7	70.7	73.0	70.0
20	2000	80.4	81.3	82.9	81.2	79.4	75.7	69.7	67.3	68.1	71.1	69.0
21	2500	81.5	84.5	84.5	82.5	81.0	76.3	69.6	71.8	68.0	69.5	70.0
22	3150	79.6	81.7	81.2	79.0	77.9	73.5	66.2	66.4	66.2	65.9	68.0
23	4000	80.9	81.6	81.1	77.7	77.1	72.1	65.6	67.9	65.1	66.3	64.0
24	5000	81.5	82.4	81.6	78.7	76.9	72.2	66.3	68.3	65.8	66.2	69.0
25	6300	99.4	87.9	86.9	82.1	80.9	75.3	68.0	68.6	68.6	69.1	69.0
26	8000	94.2	91.9	91.4	86.4	85.4	81.1	69.8	69.5	66.8	67.2	68.0
27	10000	84.2	89.3	89.0	87.1	87.1	82.3	69.8	68.7	66.6	67.5	68.0
28	12500	86.1	83.4	83.4	80.6	79.3	76.5	66.9	68.6	69.2	71.9	73.0
29	16000	86.7	85.1	84.7	80.8	79.8	76.3	64.1	64.0	64.2	67.9	69.0

252

ED FROM THE ORIGINAL DATA.

CONFIGURATION NO 200

SPEED = 1801. RPM

PERCENT SPEED = 47.0

ORIGINAL PAGE IS  
OF POOR QUALITY

## LOSSLESS ARRAY

FT RADIUS WITH NO ATMOSPHERIC ATTENUATION  
POWER AND DIRECTIVITY COMPUTATIONS)

80.	90.	100.	110.	120.	130.	180.
93.1	93.5	93.2	94.1	93.7	93.6	93.8
85.7	86.5	84.3	85.7	83.8	83.3	83.0
84.3	84.7	83.2	83.3	82.2	81.8	81.8
82.7	82.3	82.7	84.2	83.0	83.0	84.3
83.8	85.5	86.3	87.2	86.8	86.8	86.5
84.3	84.8	84.3	84.8	84.5	84.3	85.0
82.2	80.7	83.0	83.2	82.2	80.7	85.0
79.2	79.3	80.2	80.5	79.0	79.5	82.3
78.7	78.2	78.5	80.4	81.2	81.0	79.4
77.4	77.4	76.7	77.7	78.5	78.7	77.7
76.5	77.4	76.7	78.5	78.7	80.5	77.2
77.5	76.7	76.5	77.2	76.9	77.7	76.4
75.7	76.6	74.7	76.6	76.6	76.9	75.1
71.4	73.4	71.9	75.1	76.1	76.7	73.1
71.1	72.6	72.1	74.8	75.9	74.9	71.4
70.3	70.3	71.8	74.3	76.1	75.3	71.4
76.7	68.7	75.3	75.2	77.3	77.3	74.0
72.1	69.4	70.7	71.7	75.4	75.1	71.2
71.0	73.0	70.5	71.2	74.2	74.7	69.8
72.8	72.7	70.7	73.0	70.0	70.8	68.8
69.7	67.3	68.1	71.1	69.3	70.4	66.1
69.6	71.8	68.0	69.5	70.6	71.3	66.3
66.2	66.4	66.2	65.9	68.0	65.5	64.6
65.6	67.9	65.1	66.3	64.3	67.0	65.1
66.3	68.3	65.8	66.2	69.4	68.1	67.0
68.0	68.6	68.6	69.1	69.5	73.6	70.4
69.8	69.5	66.8	67.2	68.8	68.7	68.3
69.8	68.7	66.6	67.5	68.2	68.7	70.2
66.9	68.6	69.2	71.9	73.6	73.9	78.4
64.1	64.0	64.2	67.9	69.6	69.7	74.4

252



# SPL LOSSLESS DATA AT 100 FOOT RADIUS

QCSEE OTW ENGINE

BELLMOUTH, HARD NACELLE

HARD CORE, NC SPLITTER

READING NUMBERS = 180 181 182

CONFIGURATION NO = 200

SPEED = 3018. RPM

TEMPERATURE = 41.0 F

RELATIVE HUMIDITY = 48.0 PC

## SIDELINE PLANE BOOM MICROPHONES - LOSSLESS DATA

MIC #	14	15	16	17	18	19
R	0.	17.	31.	43.	54.	35.
THETA, $\theta_s$	90.	90.	90.	90.	90.	90.
Z	106.	98.	91.	86.	81.	65.
DISTANCE	91.	85.	82.	83.	86.	61.
PHI, $\phi$	0.	11.	22.	31.	39.	35.

INDEX FREQ

1	25.	92.6	90.5	90.8	92.3	93.5	92.2
2	32.	91.3	90.7	93.1	94.8	95.5	93.9
3	40.	92.5	92.4	93.4	94.3	96.0	93.2
4	50.	92.3	92.7	96.1	97.7	97.5	95.9
5	63.	93.6	92.2	94.9	94.2	95.8	95.0
6	80.	93.6	93.1	94.9	93.9	95.5	95.7
7	100.	93.1	91.6	92.9	93.7	94.2	94.6
8	125.	92.8	92.9	94.1	94.5	94.3	95.4
9	160.	90.8	90.7	91.9	92.5	94.7	93.1
10	200.	92.0	90.1	92.4	92.4	94.3	92.7
11	250.	91.2	89.4	91.3	91.7	92.3	92.9
12	315.	90.0	88.4	90.4	90.9	92.0	92.2
13	400.	89.8	88.4	90.0	89.9	90.4	91.1
14	500.	89.4	87.6	89.3	89.4	89.7	89.9
15	630.	88.2	86.3	89.0	87.9	88.7	88.8
16	800.	88.4	86.5	88.0	87.6	88.2	88.8
17	1000.	87.1	85.5	87.0	86.5	86.9	87.8
18	1250.	90.3	90.2	89.3	88.5	88.7	87.7
19	1600.	93.1	91.1	91.8	90.6	90.1	88.9
20	2000.	82.9	81.6	83.1	83.1	93.2	83.3
21	2500.	84.3	82.5	83.7	83.6	83.6	83.5
22	3150.	85.7	84.4	85.7	85.3	85.1	83.7
23	4000.	84.4	82.1	82.1	82.2	82.3	81.6
24	5000.	83.8	81.0	80.3	80.6	80.6	78.9
25	6300.	84.4	81.9	80.3	81.7	80.7	79.8
26	8000.	83.7	79.4	77.2	80.1	79.2	79.9
27	10000.	85.3	80.6	75.0	79.6	79.4	79.2
28	12500.	86.9	80.7	72.6	77.8	77.4	77.3
29	16000.	86.8	80.2	70.6	76.7	76.1	76.0

OASPL 104.8 103.6 105.2 105.6 106.4 105.8

FOLDOUT FRAME /

182

SPEED = 3018. RPM

PERCENT SPEED

81.0

FGK 14275

IVE HUMIDITY = 48.0 PC

BAROMETER = 29.10 IN HG

XMH 363

S.S. 94

253

FOLDOUT FRAME 2

. DATA OF 1218. SUBSET NO. 94. READINGS 180 181 182

SIX DECIBELS HAVE BEEN SUBTRACTED FROM THE ORIGINAL DATA.

QCSEE OTW ENGINE

BELLMOUTH, HARD NACELLE

HARD CORE, NO SPLITTER

ORIGINAL PAGE IS  
OF POOR QUALITY

SPL LOSSLESS ARRAY

FLYOVER PLANE DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERIC  
(FOR POWER AND DIRECTIVITY COMPUTATION)

ANGLE, ~~0~~ 0. 30. 40. 50. 60. 70. 80. 90. 100. 110. 120.

COMPUTED DASPL 104.6 108.0 110.0 109.4 109.6 108.3 107.5 108.4 108.8 112.4 111.

BAND FREQUENCY

1	25	85.7	92.8	95.0	96.5	98.0	97.5	99.2	100.0	99.2	103.5	100.
2	32	88.5	97.3	98.8	97.7	99.7	98.5	98.3	99.2	99.0	103.7	101.
3	40	89.8	96.0	99.7	100.3	98.7	98.0	97.3	99.2	100.2	103.2	101.
4	50	92.3	98.5	100.0	99.2	98.2	98.5	97.3	98.8	100.8	104.2	101.
5	63	92.2	97.3	98.2	97.0	94.3	95.8	96.7	98.8	98.5	101.7	99.
6	80	93.3	95.0	95.3	93.2	93.7	96.0	96.7	96.7	96.8	101.3	100.
7	100	93.2	92.0	92.0	91.5	94.2	95.0	94.5	94.8	96.7	98.5	99.
8	125	93.0	90.2	92.7	92.5	94.9	95.4	95.0	95.4	96.5	100.0	99.
9	160	90.0	90.0	92.7	93.0	93.0	94.0	93.7	93.7	94.2	97.2	99.
10	200	88.2	90.5	91.4	90.4	91.9	92.9	91.7	93.5	94.2	98.0	98.
11	250	85.7	89.0	88.4	89.5	90.2	91.2	91.7	92.4	93.4	96.2	97.
12	315	84.2	88.4	87.9	88.9	90.1	91.4	91.1	92.6	91.6	96.2	96.
13	400	83.4	86.4	87.6	88.2	89.4	89.9	88.6	91.1	90.2	94.9	96.
14	500	82.6	85.3	86.4	87.6	87.8	88.1	87.6	89.9	89.8	94.8	94.
15	630	82.4	85.1	86.3	86.8	87.3	87.3	86.4	87.6	88.6	93.6	93.
16	800	83.5	85.7	86.8	87.0	87.5	87.7	86.8	81.8	87.8	92.0	91.
17	1000	83.9	86.4	87.7	86.9	87.4	87.1	85.4	83.6	86.6	88.6	89.
18	1250	92.5	95.5	98.7	96.7	98.9	95.0	90.5	89.7	88.7	88.0	88.
19	1600	94.0	99.6	102.8	102.7	103.1	97.2	94.3	92.6	90.8	90.5	86.
20	2000	87.7	89.9	91.9	88.9	88.7	87.4	82.7	81.6	83.0	87.4	83.
21	2500	90.2	92.5	95.3	93.5	92.7	90.2	84.0	86.0	83.1	84.9	84.
22	3150	93.4	95.9	98.5	97.2	96.7	94.0	87.0	87.2	84.0	82.9	84.
23	4000	90.7	92.7	94.5	92.7	92.7	88.8	82.7	84.2	80.7	81.2	78.
24	5000	89.4	91.1	93.1	91.6	91.4	88.1	81.1	81.0	80.1	79.4	81.
25	6300	89.5	91.2	93.3	91.7	91.3	89.0	82.0	80.0	80.2	79.9	79.
26	8000	88.4	89.9	91.3	89.9	88.6	86.1	79.5	77.6	77.1	78.9	79.
27	10000	88.1	89.8	91.4	90.4	87.7	85.6	77.8	76.5	76.5	79.7	79.
28	12500	87.7	90.1	91.4	90.0	87.2	86.2	76.2	74.5	74.8	82.0	82.
29	16000	88.1	90.8	92.1	89.5	88.3	86.8	76.8	74.6	75.3	84.8	84.

254

FOLDOUT FRAME

FROM THE ORIGINAL DATA.

CONFIGURATION NO 200  
 SPEED = 3018. RPM  
 PERCENT SPEED = 81.0

LOSSLESS ARRAY

ORIGINAL PAGE IS  
 OF POOR QUALITY

ET RADIUS WITH NO ATMOSPHERIC ATTENUATION  
 (POWER AND DIRECTIVITY COMPUTATIONS)

80. 90. 100. 110. 120. 130. 180.  
 107.5 108.4 108.8 112.4 111.1 111.1 114.3

99.2	100.0	99.2	103.5	100.0	99.3	101.2
98.3	99.2	99.0	103.7	101.0	101.7	105.5
97.3	99.2	100.2	103.2	101.8	102.2	107.3
97.3	98.8	100.8	104.2	101.0	101.5	107.5
96.7	98.8	98.5	101.7	99.8	101.0	105.0
96.7	96.7	96.8	101.3	100.2	100.3	104.2
94.5	94.8	96.7	98.5	99.7	100.2	100.8
95.0	95.4	96.5	100.0	99.9	99.9	100.2
93.7	93.7	94.2	97.2	99.0	98.2	98.7
91.7	93.5	94.2	98.0	98.7	98.7	97.5
91.7	92.4	93.4	96.2	97.2	94.9	95.4
91.1	92.6	91.6	96.2	96.9	94.7	94.4
88.6	91.1	90.2	94.9	96.6	93.9	92.2
87.6	89.9	89.8	94.8	94.6	92.4	90.4
86.4	87.6	88.6	93.6	93.6	91.4	89.4
86.8	81.8	87.8	92.0	91.8	90.3	89.0
85.4	83.6	86.6	88.6	89.6	87.4	87.9
80.5	89.7	88.7	88.0	88.3	86.8	87.3
84.3	92.6	90.8	90.5	86.1	87.0	87.3
82.7	81.6	83.0	87.4	83.6	84.4	84.6
84.0	86.0	83.1	84.9	84.8	85.1	84.0
87.0	87.2	84.0	82.9	84.3	81.3	82.5
82.7	84.2	80.7	81.2	78.5	80.7	81.0
81.1	81.0	80.1	79.4	81.6	79.9	80.2
82.0	80.0	80.2	79.9	79.1	80.8	79.7
79.5	77.6	77.1	78.9	79.1	78.0	78.4
77.8	76.5	76.5	79.7	79.4	79.4	80.1
76.2	74.5	74.8	82.0	82.1	82.1	82.0
76.8	74.6	75.3	84.8	84.8	84.8	84.8

254

FOLDOUT FRAME

2

# *SPL* LOSSLESS DATA AT 100 FCOT RADIUS

QCSEE OTW ENGINE

BELLMOUTH, HARD NACELLE

HARD CORE, NC SPLITTER

ORIGINAL PAGE IS  
OF POOR QUALITY

READING NUMBERS = 183 184 185

CONFIGURATION NO = 200

SPEED = 3540. RPM

TEMPERATURE = 40.0 F

RELATIVE HUMIDITY = 49.0 PC

*SIDELINE PLANE*

ROOM MICROPHONES - LOSSLESS DATA

MIC # 14 15 16 17 18 19

R 0. 17. 31. 43. 54. 35.

THETA,  $\theta_s$  90. 90. 90. 90. 90. ~~90~~ 120

Z 106. 98. 91. 86. 81. 65.

DISTANCE 91. 85. 82. 83. 86. 61.

PHI,  $\phi$  0. 11. 22. 31. 39. 35.

INDEX FREQ

1	25.	92.8	89.8	96.8	95.7	102.2	96.2
2	32.	94.3	92.7	99.6	99.0	100.8	97.2
3	40.	94.1	94.9	97.8	98.2	100.8	99.2
4	50.	96.0	96.9	100.6	99.7	104.0	99.5
5	63.	96.8	97.7	100.8	99.7	101.0	99.9
6	80.	97.0	98.2	100.6	99.2	102.3	100.5
7	100.	96.8	97.1	99.4	98.2	100.7	99.6
8	125.	97.2	97.2	100.1	99.2	100.7	100.9
9	160.	96.8	96.7	98.8	98.4	99.7	99.1
10	200.	97.5	96.1	97.9	97.5	99.3	97.7
11	250.	96.0	94.7	97.4	96.9	98.7	98.1
12	315.	95.0	93.7	96.9	96.2	98.2	97.1
13	400.	95.5	93.2	96.6	95.7	97.5	96.4
14	500.	95.5	93.6	96.1	95.4	96.7	95.6
15	630.	93.7	93.1	94.8	94.7	96.2	94.9
16	800.	94.4	94.0	96.0	95.1	95.6	94.9
17	1000.	96.1	96.3	97.9	96.3	96.4	94.8
18	1250.	94.7	93.7	95.3	94.9	95.0	93.8
19	1600.	98.6	94.8	98.5	96.9	96.9	93.7
20	2000.	92.1	89.8	92.6	91.4	91.9	89.8
21	2500.	89.3	88.0	89.7	89.5	90.1	89.0
22	3150.	90.0	88.7	89.7	89.3	90.0	88.7
23	4000.	89.2	86.8	87.5	87.6	88.3	86.9
24	5000.	89.3	86.5	86.3	86.9	87.3	84.1
25	6300.	89.1	86.4	85.0	87.2	86.4	84.6
26	8000.	87.6	84.2	82.1	85.6	84.7	84.9
27	10000.	88.4	84.6	80.0	84.7	84.7	84.0
28	12500.	89.6	84.3	77.3	82.4	82.4	81.5
29	16000.	90.0	83.8	79.4	81.2	81.6	80.6

FOLDOUT FRAME

OASPL

109.3 108.5 111.3 110.5 112.7 110.8

ORIGINAL PAGE IS  
OF POOR QUALITY

185

SPEED = 3540. RPM

PERCENT SPEED 95.0

FGK 20671

VE HUMIDITY = 49.0 PC

BAROMETER = 29.08 IN HG

XMH .436

LDOUT FRAME

255

FOLDOUT FRAME

SS. 95

1

2

DATA OF 1218. SUBSET NO. 95. READINGS 183 184 185

SIX DECIBELS HAVE BEEN SUBTRACTED FROM THE ORIGINAL DATA.  
 QCSEE OTW ENGINE  
 BELLMOUTH, HARD NACELLE  
 HARD CORE, NO SPLITTER

*SPL* LOSSLESS ARRAY

ORIGINAL PAGE IS  
 OF POOR QUALITY

*FLYOVER PLANE* DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERIC  
 (FOR POWER AND DIRECTIVITY COMPUTATION)

ANGLE *θ* 0. 30. 40. 50. 60. 70. 80. 90. 100. 110. 120

COMPUTED OASPL 108.3 111.6 112.2 113.0 113.8 113.5 112.6 114.1 114.7 116.6 118

BAND FREQUENCY

1	25	89.5	96.3	98.2	98.8	101.0	98.8	101.0	102.2	102.8	101.3	104
2	32	91.5	99.3	99.8	102.0	103.2	103.2	101.3	103.7	103.8	103.3	106
3	40	93.8	100.2	102.2	103.0	103.5	103.8	102.3	104.2	105.5	105.7	108
4	50	96.8	103.5	104.0	103.5	102.3	100.8	102.2	104.8	105.5	107.8	109
5	63	97.5	102.2	102.3	101.5	100.7	99.2	102.8	104.5	104.7	106.2	108
6	80	97.0	100.3	99.8	98.2	99.8	100.8	101.8	103.8	105.5	106.7	108
7	100	97.0	98.2	95.8	98.0	98.7	100.7	101.0	102.3	103.0	105.2	106
8	125	95.7	96.5	96.7	98.2	100.2	101.0	101.2	100.9	102.7	105.5	107
9	160	95.0	96.4	97.5	97.5	98.4	98.7	99.0	99.4	100.4	103.9	105
10	200	93.4	96.5	96.7	96.9	97.4	98.9	97.2	99.9	101.0	104.4	105
11	250	88.4	95.0	94.0	94.4	95.9	96.0	97.5	97.5	99.9	102.9	103
12	315	88.6	94.1	93.4	93.6	96.4	96.7	96.9	99.4	98.4	103.1	103
13	400	88.4	92.2	92.4	94.2	95.1	96.4	94.6	97.7	97.7	102.6	103
14	500	87.6	90.9	92.8	93.6	93.8	94.3	94.8	96.2	96.9	101.4	100
15	630	88.6	91.1	95.8	95.1	94.4	95.6	94.1	94.4	96.4	100.6	99
16	800	88.8	91.5	94.2	95.5	96.2	95.5	94.3	89.2	95.7	98.5	98
17	1000	91.1	94.7	95.7	100.7	102.1	101.1	98.2	95.7	95.4	96.1	96
18	1250	92.5	94.5	95.5	99.5	101.0	99.3	95.7	97.5	94.7	93.5	95
19	1600	100.7	101.5	102.2	103.3	105.5	104.3	100.0	101.2	96.3	98.7	92
20	2000	93.6	95.2	96.2	97.2	99.0	98.4	93.7	93.6	92.2	95.2	91
21	2500	92.0	93.8	95.3	96.8	95.6	95.8	90.6	94.3	91.0	91.6	92
22	3150	94.7	96.4	95.9	96.7	97.2	96.4	91.1	91.0	90.7	88.5	91
23	4000	91.4	93.5	94.2	95.1	94.9	94.4	89.4	90.9	87.9	87.6	85
24	5000	91.8	93.1	94.8	94.8	94.1	94.3	88.1	89.2	87.1	85.6	88
25	6300	91.3	92.5	93.5	93.8	93.1	93.0	86.8	87.1	86.5	85.5	85
26	8000	90.0	90.5	92.0	92.2	90.3	91.0	84.4	84.6	84.1	84.3	85
27	10000	89.8	90.1	91.8	92.3	90.0	91.7	82.4	83.3	82.9	84.0	84
28	12500	88.5	89.0	90.5	90.6	88.7	91.4	81.8	81.9	81.7	83.2	84
29	16000	88.3	89.0	90.3	89.9	88.6	91.1	84.5	84.5	84.5	84.4	84

256

FOLDOUT FRAME

FROM THE ORIGINAL DATA.

CONFIGURATION NO 200  
 SPEED = 3540. RPM  
 PERCENT SPEED = 95.0

LOSSLESS ARRAY

ORIGINAL PAGE IS  
 OF POOR QUALITY

ET RADIUS WITH NO ATMOSPHERIC ATTENUATION  
 POWER AND DIRECTIVITY COMPUTATIONS)

80. 90. 100. 110. 120. 130. 180.

112.6 114.1 114.7 116.6 118.1 117.2 121.6

101.0	102.2	102.8	101.3	104.7	104.2	106.3
101.3	103.7	103.8	103.3	106.0	107.8	106.8
102.3	104.2	105.5	105.7	108.7	107.8	111.2
102.2	104.8	105.5	107.8	109.2	108.5	116.0
102.8	104.5	104.7	106.2	108.3	108.8	114.0
101.8	103.8	105.5	106.7	108.2	107.5	113.7
101.0	102.3	103.0	105.2	106.3	106.0	109.7
101.2	100.9	102.7	105.5	107.2	105.2	108.9
99.0	99.4	100.4	103.9	105.9	103.4	106.9
97.2	99.9	101.0	104.4	105.7	102.7	106.4
97.5	97.5	99.9	102.9	103.9	100.2	103.9
96.9	99.4	98.4	103.1	103.9	100.6	103.1
94.6	97.7	97.7	102.6	103.1	99.4	100.7
94.8	96.2	96.9	101.4	100.9	97.6	98.7
94.1	94.4	96.4	100.6	99.9	97.3	97.1
94.3	89.2	95.7	98.5	98.3	95.8	96.5
98.2	95.7	95.4	96.1	96.7	94.4	95.6
95.7	97.5	94.7	93.5	95.3	92.3	94.5
100.0	101.2	96.3	98.7	92.5	92.0	93.8
93.7	93.6	92.2	95.2	91.1	90.9	92.1
90.6	94.3	91.0	91.6	92.1	91.3	91.5
91.1	91.0	90.7	88.5	91.0	86.2	89.2
89.4	90.9	87.9	87.6	85.5	86.2	87.9
88.1	89.2	87.1	85.6	88.5	85.4	87.6
86.8	87.1	86.5	85.5	85.3	86.0	86.9
84.4	84.6	84.1	84.3	85.3	82.9	86.9
82.4	83.3	82.9	84.0	84.5	82.5	89.3
81.8	81.9	81.7	83.2	84.5	81.8	91.9
84.5	84.5	84.5	84.4	84.6	84.5	94.5

256

FOLDOUT FRAME

2



# SPL LOSSLESS DATA AT 100 FOOT RADIUS

QCSEE OTW ENGINE

BELLMOUTH, HARD NACELLE

HARD CORE, NC SPLITTER

READING NUMBERS = 186 187 188

CONFIGURATION NO = 200

SPEED = 3205. RPM

TEMPERATURE = 40.0 F

RELATIVE HUMIDITY = 50.0 P

## SIDELINE PLANE

BOOM MICROPHONES - LOSSLESS DATA

MIC #	14	15	16	17	18	19
R	0.	17.	31.	43.	54.	35.
THETA, $\theta_s$	90.	90.	90.	90.	90.	<del>90</del> 120
Z	106.	98.	91.	86.	81.	65.
DISTANCE	91.	85.	82.	83.	86.	61.
PHI, $\phi$	0.	11.	22.	31.	39.	35.

INDEX	FREQ						
1	25.	91.0	92.9	92.8	95.3	93.5	95.2
2	32.	93.3	91.9	94.3	96.2	94.2	96.5
3	40.	94.6	92.2	95.9	97.3	97.3	97.7
4	50.	94.5	95.5	98.6	99.2	100.8	99.0
5	63.	95.8	94.9	96.4	97.2	97.5	98.5
6	80.	94.1	93.7	96.8	97.7	98.0	99.5
7	100.	94.0	94.1	94.9	95.5	96.5	96.2
8	125.	94.3	94.9	96.3	96.0	97.8	96.7
9	160.	93.5	93.4	94.1	94.7	96.8	95.9
10	200.	93.3	92.1	93.8	94.4	95.5	95.7
11	250.	93.3	92.1	93.8	93.7	94.0	95.6
12	315.	92.2	90.4	92.8	92.7	94.4	94.4
13	400.	92.7	90.6	92.1	92.2	93.2	93.4
14	500.	92.4	89.9	91.3	91.4	92.5	92.6
15	630.	90.5	88.6	90.1	90.2	91.1	91.6
16	800.	91.1	89.3	89.7	89.8	90.2	91.4
17	1000.	89.1	87.3	88.7	89.0	89.3	90.3
18	1250.	88.8	86.9	88.3	88.0	88.5	89.2
19	1600.	94.3	93.5	92.2	92.3	91.1	91.1
20	2000.	85.6	84.6	85.5	85.6	86.1	85.7
21	2500.	85.2	84.0	84.4	84.8	85.3	85.3
22	3150.	88.2	87.0	86.0	86.4	87.1	85.7
23	4000.	85.3	83.1	82.8	83.2	83.4	83.4
24	5000.	86.1	83.8	83.0	83.4	83.5	80.9
25	6300.	85.8	84.0	81.8	83.6	82.7	81.6
26	8000.	84.6	81.3	78.7	82.2	81.3	81.9
27	10000.	85.9	81.9	76.3	81.2	81.4	81.2
28	12500.	87.6	82.0	74.3	79.3	79.1	79.2
29	16000.	87.9	81.5	72.7	78.1	78.0	77.6

FOLDOUT FRAME  
1

188

SPEED = 3205. RPM

PERCENT SPEED

86.0

FGK 12246

VE HUMIDITY = 50.0 PC

BAROMETER = 29.09 IN HG

XMH .376

FOLDOUT FRAME

2

S.S. 96

257

DATA OF 1218. SUBSET NO. 96. READINGS 186 187 188

SIX DECIBELS HAVE BEEN SUBTRACTED FROM THE ORIGINAL DATA.  
QCSEE OTW ENGINE  
BELLMOUTH, HARD NACELLE  
HARD CORE, NO SPLITTER

ORIGINAL PAGE IS  
OF POOR QUALITY

SPL LOSSLESS ARRAY

FLYOVER PLANE DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERIC  
(FOR POWER AND DIRECTIVITY COMPUTATION)

ANGLE		0.	30.	40.	50.	60.	70.	80.	90.	100.	110.	120.
COMPUTED OASPL		106.6	109.4	110.9	110.6	111.1	109.8	109.2	110.2	110.7	112.3	113.
BAND FREQUENCY												
1	25	87.3	94.2	97.3	97.3	99.3	99.2	97.7	100.0	99.2	100.0	100.
2	32	90.7	97.8	100.7	100.0	102.0	99.8	99.8	100.8	101.2	101.2	100.
3	40	91.2	98.0	101.2	103.3	103.7	100.7	100.2	100.8	101.7	103.2	103.
4	50	93.5	99.2	102.2	100.3	101.5	97.8	100.2	102.2	102.5	102.5	103.
5	63	94.5	98.7	100.3	98.3	97.5	97.2	99.0	99.2	100.5	102.5	103.
6	80	95.8	97.2	97.8	95.5	96.5	97.8	99.0	98.5	99.7	102.2	101.
7	100	95.8	95.3	94.3	94.5	96.3	96.5	96.8	98.0	98.8	100.5	101.
8	125	95.0	91.9	95.0	95.9	96.5	96.7	96.5	97.5	99.5	100.9	103.
9	160	92.2	91.4	95.7	95.0	95.5	96.5	94.7	95.9	96.5	99.0	101.
10	200	91.2	92.7	94.4	93.0	93.7	94.7	93.4	95.2	95.9	99.5	101.
11	250	87.4	91.0	90.7	91.0	92.4	93.2	94.4	94.4	95.7	98.2	99.
12	315	86.4	89.9	90.4	90.6	92.2	93.7	93.4	95.7	94.1	97.7	99.
13	400	85.4	88.2	89.7	90.6	91.2	92.2	89.9	93.6	93.2	96.9	98.
14	500	85.4	86.6	89.1	89.1	89.9	89.9	89.9	93.1	92.7	96.9	96.
15	630	84.9	87.8	88.9	88.8	88.9	89.1	88.8	90.4	91.3	95.9	95.
16	800	84.2	87.2	88.3	89.2	89.3	89.8	89.0	84.0	90.3	94.3	94.
17	1000	85.4	87.6	88.6	88.7	88.4	88.4	88.1	86.1	89.7	90.7	92.
18	1250	90.2	92.0	92.5	92.0	91.3	90.0	87.7	90.0	88.3	87.8	90.
19	1600	99.6	102.7	102.8	102.6	102.5	101.0	95.1	95.1	91.0	92.2	88.
20	2000	88.5	90.7	91.0	90.0	89.5	88.7	85.7	84.4	85.9	89.2	86.
21	2500	90.2	91.5	91.2	92.2	89.8	88.3	84.3	87.8	85.3	86.6	87.
22	3150	95.7	97.9	97.5	97.2	96.5	94.2	89.7	87.7	86.2	84.3	86.
23	4000	89.0	91.7	91.8	91.0	90.3	88.7	83.6	86.2	82.3	83.2	81.
24	5000	90.7	94.2	94.6	94.6	93.7	91.9	85.7	84.0	82.7	81.7	84.
25	6300	90.3	92.6	92.9	92.6	90.9	88.9	83.4	83.6	81.6	80.8	81.
26	8000	88.6	90.9	91.1	90.6	89.1	86.6	81.0	81.0	79.2	79.6	81.
27	10000	88.6	90.8	91.0	91.0	88.8	86.7	79.7	79.3	79.2	79.7	81.
28	12500	87.6	89.7	90.1	89.2	86.9	85.9	81.9	81.9	81.9	81.9	81.
29	16000	87.8	89.8	90.3	88.2	96.8	86.3	84.6	84.6	84.6	84.6	84.

258

FOLDOUT FRAME

FROM THE ORIGINAL DATA.

CONFIGURATION NO 200  
 SPEED = 3205. RPM  
 PERCENT SPEED = 86.0

D S S L E S S A R R A Y

ORIGINAL PAGE IS  
 OF POOR QUALITY

RADIUS WITH NO ATMOSPHERIC ATTENUATION  
 R AND DIRECTIVITY COMPUTATIONS)

80. 90. 100. 110. 120. 130. 180.

9.2 110.2 110.7 112.3 113.3 113.2 116.9

7.7	100.0	99.2	100.0	100.5	102.5	102.8
9.8	100.8	101.2	101.2	100.8	104.0	107.2
10.2	100.8	101.7	103.2	103.8	104.7	109.5
10.2	102.2	102.5	102.5	103.8	105.0	109.5
9.0	99.2	100.5	102.5	103.3	103.8	109.5
9.0	98.5	99.7	102.2	101.7	102.0	107.5
6.8	98.0	98.8	100.5	101.8	100.8	104.2
6.5	97.5	99.5	100.9	103.0	101.2	103.0
4.7	95.9	96.5	99.0	101.9	99.5	101.5
3.4	95.2	95.9	99.5	101.5	99.2	100.5
4.4	94.4	95.7	98.2	99.2	96.7	97.9
3.4	95.7	94.1	97.7	99.2	96.1	97.6
9.9	93.6	93.2	96.9	98.7	95.7	95.6
9.9	93.1	92.7	96.9	96.9	94.1	93.6
8.8	90.4	91.3	95.9	95.9	92.8	92.6
9.0	84.0	90.3	94.3	94.5	92.0	92.3
8.1	86.1	89.7	90.7	92.0	89.5	90.9
7.7	90.0	88.3	87.8	90.5	87.3	89.5
5.1	95.1	91.0	92.2	88.3	88.3	90.0
5.7	84.4	85.9	89.2	86.6	86.6	87.1
4.3	87.8	85.3	86.6	87.8	86.9	86.3
9.7	87.7	86.2	84.3	86.8	82.8	84.8
3.6	86.2	82.3	83.2	81.0	82.9	83.9
5.7	84.0	82.7	81.7	84.2	82.6	83.0
3.4	83.6	81.6	80.8	81.1	82.9	82.3
1.0	81.0	79.2	79.6	81.0	79.4	81.0
9.7	79.3	79.2	79.7	81.2	79.2	82.4
1.9	81.9	81.9	81.9	81.9	81.9	83.5
4.6	84.6	84.6	84.6	84.6	84.6	84.5

258

FOLDOUT FRAME

2

*SPL*

## LOSSLESS DATA AT 100 FOOT RADIUS

QCSEE OTW ENGINE

BELLMOUTH, HARD NACELLE

HARD CORE, NC SPLITTER

READING NUMBERS = 189 190 191

CONFIGURATION NO = 200

SPEED = 3354. RPM

TEMPERATURE = 40.0 F

RELATIVE HUMIDITY = 50.0 PC

*SIDELINE PLANE*

BOOM MICROPHONES - LOSSLESS DATA

MIC #	14	15	16	17	18	19
R	0.	17.	31.	43.	54.	35.
THETA, $\theta_s$	90.	90.	90.	90.	90.	<del>90.</del> 120
Z	106.	98.	91.	86.	81.	65.
DISTANCE	91.	85.	82.	83.	86.	61.
PHI, $\phi$	0.	11.	22.	31.	39.	35.

INDEX	FREQ						
1	25.	92.3	91.7	92.4	94.5	93.3	96.4
2	32.	92.5	93.0	96.4	96.2	98.2	97.2
3	40.	94.3	93.9	97.1	97.7	99.7	99.9
4	50.	96.5	96.0	99.1	100.5	100.3	100.5
5	63.	96.5	96.2	97.4	96.9	99.0	98.9
6	80.	96.8	96.7	98.4	97.2	98.8	100.5
7	100.	96.1	94.7	95.8	96.9	97.7	98.1
8	125.	96.5	96.2	97.8	98.4	98.8	99.6
9	160.	95.0	94.4	95.9	96.2	97.5	97.7
10	200.	95.7	93.6	94.9	95.7	96.8	96.6
11	250.	94.3	93.4	94.4	95.4	96.3	96.6
12	315.	93.0	92.1	94.4	94.2	95.9	95.9
13	400.	94.5	91.7	93.6	93.4	94.4	95.4
14	500.	93.7	91.1	93.0	93.4	93.2	94.1
15	630.	92.2	90.6	92.1	92.1	93.2	92.8
16	800.	91.9	90.0	91.7	91.8	92.2	92.8
17	1000.	90.6	89.5	90.9	91.3	91.3	92.3
18	1250.	89.0	88.1	89.4	89.9	90.0	91.2
19	1600.	93.4	91.5	92.8	91.9	91.1	90.9
20	2000.	87.1	86.1	87.3	87.2	87.7	87.7
21	2500.	86.5	85.5	86.2	86.6	87.0	87.3
22	3150.	87.5	85.8	86.5	86.9	87.0	86.7
23	4000.	86.2	84.5	84.5	85.2	85.3	84.9
24	5000.	86.6	84.0	83.4	84.4	84.6	82.4
25	6300.	86.7	84.4	82.3	84.6	84.0	83.2
26	8000.	85.4	82.0	79.7	83.5	82.3	83.7
27	10000.	86.6	82.4	77.2	82.5	82.0	82.6
28	12500.	88.3	82.2	74.7	80.2	80.1	80.2
29	16000.	88.6	81.7	72.9	78.9	78.9	79.1

OASPL

107.6 106.6 108.3 108.7 109.6 110.5

FOLDOUT FRAME

91

SPEED = 3354. RPM

PERCENT SPEED 90.0

FGK 18069

WE HUMIDITY = 50.0 PC

BAROMETER = 29.09 IN HG

XM 11 572

FOLDOUT FRAME 2

S.S. 97

259

DATA OF 1218. SUBSET NO. 97. READINGS 189 190 191

SIX DECIBELS HAVE BEEN SUBTRACTED FROM THE ORIGINAL DATA.  
QCSEE OTW ENGINE  
BELLMOUTH, HARD NACELLE  
HARD CORE, NO SPLITTER

ORIGINAL PAGE IS  
OF POOR QUALITY

SPL LOSSLESS ARRAY

FLYOVER PLANE DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERIC A  
(FOR POWER AND DIRECTIVITY COMPUTATION)

ANGLE,  $\theta$  0. 30. 40. 50. 60. 70. 80. 90. 100. 110. 120.

COMPUTED DASPL 107.5 110.8 110.8 111.4 111.0 110.8 110.5 111.6 112.5 114.0 115.7 1

BAND FREQUENCY

1	25	90.0	96.5	94.5	99.2	99.0	99.8	99.2	101.0	101.0	101.2	101.0	1
2	32	90.2	98.8	100.5	99.8	101.3	101.5	100.2	101.3	101.8	102.5	104.8	1
3	40	91.3	100.0	102.3	103.0	102.2	100.7	101.2	101.8	102.7	104.5	105.3	1
4	50	95.8	102.7	101.5	103.2	101.5	99.5	100.3	103.5	104.0	105.8	105.5	1
5	63	96.5	100.2	100.3	99.3	99.0	100.0	101.2	102.2	102.5	103.3	105.8	1
6	80	98.2	100.0	97.5	96.2	98.7	98.7	100.8	100.3	102.5	103.5	105.0	1
7	100	97.8	96.7	94.7	96.0	97.0	98.3	98.8	98.7	101.3	101.7	104.5	1
8	125	95.9	94.4	95.9	96.9	97.7	98.2	98.4	98.9	101.2	102.0	105.4	1
9	160	94.2	93.7	96.0	96.0	96.4	98.2	96.7	97.7	99.2	101.4	103.5	1
10	200	92.4	94.9	95.2	94.7	95.4	96.9	95.5	97.7	98.5	101.9	103.5	1
11	250	88.2	93.0	91.9	93.0	93.9	95.0	95.7	96.7	97.2	99.9	102.7	
12	315	87.6	91.6	90.7	92.2	93.9	95.7	95.4	97.2	96.1	99.7	101.7	
13	400	86.4	89.9	90.9	91.7	93.4	94.2	93.1	95.6	94.9	98.7	101.2	
14	500	86.4	88.9	90.6	90.6	91.9	92.4	92.4	94.9	94.2	97.7	99.4	
15	630	86.3	89.9	91.4	92.3	90.9	92.9	91.6	91.9	94.1	97.4	98.6	
16	800	85.0	88.8	89.8	91.0	91.3	92.3	91.2	86.2	92.7	95.1	96.7	
17	1000	88.1	90.9	90.7	91.7	93.6	92.1	90.2	88.4	91.6	91.7	94.5	
18	1250	87.8	90.5	90.7	91.5	92.2	90.3	88.7	91.8	90.2	89.3	93.0	
19	1600	99.8	103.2	102.3	102.8	101.0	98.0	94.6	95.1	92.1	93.0	90.6	
20	2000	88.5	91.5	92.2	92.5	92.5	90.9	87.0	86.2	87.7	91.1	88.9	
21	2500	89.0	92.2	92.5	94.8	92.6	92.0	86.0	89.8	87.3	88.8	90.1	
22	3150	91.9	96.7	95.7	95.5	94.5	93.0	88.5	86.0	87.2	85.0	88.8	
23	4000	89.5	92.3	92.3	92.4	90.5	89.0	85.0	87.2	84.2	84.8	83.5	
24	5000	91.4	93.2	93.6	94.4	91.7	88.9	85.4	85.2	84.2	82.5	86.4	
25	6300	90.9	92.6	92.8	93.2	90.6	88.6	83.9	83.9	83.2	82.5	83.9	
26	8000	89.4	90.9	90.9	91.4	88.4	85.6	81.2	80.7	81.1	81.1	83.6	
27	10000	89.8	90.8	90.8	91.5	88.2	86.2	79.8	80.0	80.0	81.4	83.5	
28	12500	88.2	90.1	89.7	89.7	86.7	85.9	81.9	81.9	81.9	81.9	84.5	
29	16000	87.7	89.6	89.6	88.7	86.1	85.9	84.6	84.6	84.6	84.6	84.8	

260

FOLDOUT FRAME |

FROM THE ORIGINAL DATA.

CONFIGURATION NO 200

SPEED = 3354. RPM

PERCENT SPEED = 90.0

S S L E S S A R R A Y

RADIUS WITH NO ATMOSPHERIC ATTENUATION  
AND DIRECTIVITY COMPUTATIONS)ORIGINAL PAGE IS  
OF POOR QUALITY

90. 100. 110. 120. 130. 180.

5 111.6 112.5 114.0 115.7 114.8 118.8

2	101.0	101.0	101.2	101.0	102.0	101.3
2	101.3	101.8	102.5	104.8	103.2	106.5
2	101.8	102.7	104.5	105.3	106.0	110.8
3	103.5	104.0	105.8	105.5	106.7	112.2
2	102.2	102.5	103.3	105.8	105.8	111.7
3	100.3	102.5	103.5	105.0	105.0	110.5
8	98.7	101.3	101.7	104.5	104.3	106.7
4	98.9	101.2	102.0	105.4	103.9	105.0
7	97.7	99.2	101.4	103.5	101.7	102.9
5	97.7	98.5	101.9	103.5	100.9	102.0
7	96.7	97.2	99.9	102.7	97.5	100.2
4	97.2	96.1	99.7	101.7	97.4	98.7
1	95.6	94.9	98.7	101.2	96.7	97.1
4	94.9	94.2	97.7	99.4	96.2	95.2
5	91.9	94.1	97.4	98.6	95.3	94.4
2	86.2	92.7	95.1	96.7	93.3	93.7
2	88.4	91.6	91.7	94.5	92.2	93.2
7	91.8	90.2	89.3	93.0	89.0	92.2
5	95.1	92.1	93.0	90.6	90.3	91.1
0	86.2	87.7	91.1	88.9	88.4	89.1
0	89.8	87.3	88.8	90.1	88.8	88.4
0	86.0	87.2	85.0	88.8	84.3	86.8
0	87.2	84.2	84.8	83.5	84.0	85.7
0	85.2	84.2	82.5	86.4	83.6	85.0
0	83.9	83.2	82.5	83.9	84.1	83.9
0	80.7	81.1	81.1	83.6	81.0	82.5
0	80.0	80.0	81.4	83.5	80.7	83.4
0	81.9	81.9	81.9	84.5	81.9	84.1
0	84.6	84.6	84.6	84.8	84.6	85.0

260

FOLDOUT FRAME 2



SPL

## LOSSLESS DATA AT 100 FOOT RADIUS

QCSEE OTW ENGINE

BELLMOUTH, HARD NACELLE

HARD CORE, NC SPLITTER

READING NUMBERS = 192 193 194

CONFIGURATION NO = 200

SPEED = 2422. RPM

TEMPERATURE = 40.0 F

RELATIVE HUMIDITY = 50.0 PC

SIDELINE PLANE

BOOM MICROPHONES - LOSSLESS DATA

MIC #	14	15	16	17	18	19
R	0.	17.	31.	43.	54.	35.
THETA, $\theta_s$	90.	90.	90.	90.	90.	<del>90</del> /120
Z	106.	98.	91.	86.	81.	65.
DISTANCE	91.	85.	82.	83.	86.	61.
PHI, $\phi$	0.	11.	22.	31.	39.	35.

INDEX	FREQ						
1	25.	85.1	82.9	88.9	87.5	89.7	86.2
2	32.	86.5	86.2	91.3	88.3	93.2	85.9
3	40.	85.3	87.2	91.1	88.8	93.7	88.5
4	50.	89.0	88.7	93.3	93.0	97.8	92.0
5	63.	87.0	88.9	89.6	89.9	91.8	89.5
6	80.	87.8	87.6	90.1	88.5	92.5	91.0
7	100.	85.8	85.7	88.1	86.7	90.2	89.6
8	125.	87.0	86.7	87.4	87.5	90.7	88.6
9	160.	84.7	83.9	86.4	86.0	89.0	86.4
10	200.	85.2	84.2	86.4	86.2	87.8	87.2
11	250.	86.3	85.6	86.6	86.0	87.3	87.4
12	315.	84.3	82.2	85.9	84.5	86.9	85.7
13	400.	82.7	81.4	84.0	83.4	84.5	84.7
14	500.	82.9	79.9	83.1	82.1	83.5	83.4
15	630.	82.4	80.1	81.6	81.1	82.6	82.8
16	800.	82.1	79.1	81.2	80.3	81.2	82.8
17	1000.	82.6	79.7	81.4	81.1	81.4	82.5
18	1250.	83.8	81.9	83.8	82.4	82.8	83.0
19	1600.	78.9	76.1	77.7	77.6	77.4	78.4
20	2000.	78.8	76.3	77.5	77.1	77.6	77.7
21	2500.	80.8	78.5	78.5	79.1	79.0	78.3
22	3150.	79.0	76.0	75.8	76.6	76.1	77.4
23	4000.	78.8	75.5	75.1	75.6	75.3	75.9
24	5000.	79.3	75.5	74.8	75.4	74.5	73.7
25	6300.	80.6	77.1	74.8	76.0	75.1	75.4
26	8000.	82.3	77.1	73.4	76.6	75.0	77.4
27	10000.	83.7	78.9	72.9	76.7	76.2	78.0
28	12500.	85.3	78.8	70.6	75.6	74.6	75.9
29	16000.	84.0	77.3	68.4	72.7	71.6	74.1

OASPL

98.9 98.0 100.7 99.8 103.2 100.3

FOLDOUT FRAME

4

PEED = 2422. RPM

PERCENT SPEED

65.0

FGX 9001

HUMIDITY = 50.0 PC

BAROMETER = 29.09 IN HG

XM11 .303

FOLDOUT FRAME

S.S. 98

261

2

DATA OF 1218. SURSET NO. 98. READINGS 192 193 194

SIX DECIBELS HAVE BEEN SUBTRACTED FROM THE ORIGINAL DATA.

QCSEE OTW ENGINE  
BELLMOUTH, HARD NACELLE  
HARD CORE, NO SPLITTER

ORIGINAL PAGE IS  
OF POOR QUALITY.

*SPL* LOSSLESS ARRAY

*Flyover Plane* DATA AT 100.0 FT RADIUS WITH NO ATMOSPHE  
(FOR POWER AND DIRECTIVITY COMPUT

ANGLE,  $\theta$  0. 30. 40. 50. 60. 70. 80. 90. 100. 110. 1

COMPUTED CASPL 101.4 104.2 104.7 104.3 103.3 102.2 101.0 101.8 101.9 102.8 10

BAND FREQUENCY

1	25	85.0	87.3	92.5	92.7	93.7	92.0	91.8	94.8	93.2	92.8	9
2	32	87.5	91.7	94.3	94.3	93.0	93.3	91.0	93.2	91.5	92.5	9
3	40	86.7	92.0	92.8	94.7	94.8	92.5	92.2	91.3	93.2	93.3	9
4	50	89.2	93.7	94.2	93.3	93.2	92.3	92.7	93.5	94.2	95.8	9
5	63	86.8	92.5	91.8	90.8	89.0	89.7	91.7	91.2	91.5	92.2	9
6	80	88.0	89.8	89.7	87.8	88.0	90.2	90.5	88.8	91.7	91.0	9
7	100	88.8	87.7	85.0	86.7	87.5	89.0	87.8	88.2	89.3	90.7	9
8	125	88.2	85.2	86.9	87.7	87.5	88.4	88.5	87.5	89.4	90.7	9
9	160	86.2	84.9	86.7	86.4	86.9	86.7	86.4	87.2	87.2	88.2	9
10	200	84.7	85.0	86.5	85.5	85.5	86.4	84.9	86.7	86.9	88.5	9
11	250	84.4	84.4	84.7	83.2	84.7	86.2	86.2	86.5	85.4	88.0	8
12	315	81.9	82.9	82.4	82.6	83.6	84.7	84.7	86.4	83.9	86.4	8
13	400	79.6	81.6	81.9	82.1	83.1	83.1	81.2	83.7	82.7	85.4	8
14	500	78.6	79.1	80.7	80.6	80.7	80.9	80.7	83.1	81.7	85.1	8
15	630	78.9	79.8	80.6	80.4	79.8	80.1	79.3	79.8	81.1	83.9	8
16	800	80.0	81.0	81.8	81.0	80.5	80.8	79.5	74.0	80.0	82.5	8
17	1000	87.1	88.1	87.9	88.1	85.4	82.7	79.6	79.1	79.7	80.0	8
18	1250	93.7	94.3	94.3	94.0	90.7	86.5	80.5	84.2	81.2	78.7	8
19	1600	86.6	87.3	87.5	85.1	83.0	80.6	76.6	78.0	76.5	78.7	7
20	2000	85.2	88.9	89.8	87.8	86.9	83.4	77.4	75.4	76.2	79.4	7
21	2500	86.4	90.8	93.8	92.6	90.5	87.5	80.3	80.5	77.1	77.8	7
22	3150	84.2	87.8	88.5	88.0	87.7	82.7	76.8	75.3	75.7	74.5	7
23	4000	84.2	87.5	88.4	87.7	86.8	82.3	76.3	77.0	73.7	74.5	7
24	5000	82.6	87.1	87.9	87.4	85.7	80.7	74.3	74.5	73.2	73.4	7
25	6300	86.3	88.4	88.2	87.6	84.9	80.6	73.8	73.6	73.1	72.6	7
26	8000	90.5	91.8	89.0	87.0	83.4	79.8	72.3	72.3	72.1	72.5	7
27	10000	87.7	94.4	94.1	93.0	88.7	85.8	73.6	72.2	71.8	73.0	7
28	12500	85.0	92.3	91.6	91.8	89.4	88.6	74.1	71.8	71.8	72.1	7
29	16000	84.6	89.8	89.3	87.9	86.3	85.1	74.5	74.6	74.6	74.6	7

262

FOLDOUT FRAME |

ED FROM THE ORIGINAL DATA.

CONFIGURATION NO 200

SPEED = 2422. RPM

PERCENT SPEED = 65.0

L O S S L E S S A R R A Y

ORIGINAL PAGE IS

OF POOR QUALITY

FT RADIUS WITH NO ATMOSPHERIC ATTENUATION  
POWER AND DIRECTIVITY COMPUTATIONS)

80.	90.	100.	110.	120.	130.	180.
101.0	101.8	101.9	102.8	103.9	103.2	105.9

91.8	94.8	93.2	92.8	93.0	93.0	95.7
91.0	93.2	91.5	92.5	93.0	93.2	97.2
92.2	91.3	93.2	93.3	94.5	93.8	99.0
92.7	93.5	94.2	95.8	96.0	95.0	97.8
91.7	91.2	91.5	92.2	93.2	92.3	95.8
90.5	88.8	91.7	91.0	93.0	92.7	96.3
87.8	88.2	89.3	90.7	90.5	90.8	93.7
88.5	87.5	89.4	90.7	91.9	91.5	90.5
86.4	87.2	87.2	88.2	90.9	89.7	90.4
84.9	86.7	86.9	88.5	91.0	90.5	90.2
86.2	86.5	85.4	88.0	88.7	87.4	87.2
84.7	86.4	83.9	86.4	88.6	87.2	86.4
81.2	83.7	82.7	85.4	88.6	86.4	84.4
80.7	83.1	81.7	85.1	87.2	84.6	82.9
79.3	79.8	81.1	83.9	85.9	83.6	81.9
79.5	74.0	80.0	82.5	85.0	82.5	81.3
79.6	79.1	79.7	80.0	83.6	81.7	91.1
80.5	84.2	81.2	78.7	83.5	81.3	81.0
76.6	78.0	76.5	78.7	77.0	75.6	77.8
77.4	75.4	76.2	79.4	77.7	78.4	76.7
80.3	80.5	77.1	77.8	79.6	79.8	77.3
76.8	75.3	75.7	74.5	77.6	73.5	75.2
76.3	77.0	73.7	74.5	73.0	74.4	74.7
74.3	74.5	73.2	73.4	76.2	74.6	74.4
73.8	73.6	73.1	72.6	74.3	75.6	74.8
72.3	72.3	72.1	72.5	75.0	73.8	75.4
73.6	72.2	71.8	73.0	75.0	74.0	77.6
74.1	71.8	71.8	72.1	74.9	72.6	77.8
74.5	74.6	74.6	74.6	74.6	74.6	79.6

262

FOLDOUT FRAME

2

# *SPL* LOSSLESS DATA AT 100 FOOT RADIUS

QCSEE OTW ENGINE

BELLMOUTH, HARD NACELLE

HARD CORE, NO SPLITTER

READING NUMBERS = 195 196 197

CONFIGURATION NO = 200

SPEED = 3615. RPM

TEMPERATURE = 40.0 F

RELATIVE HUMIDITY = 53.0 PC

## *SIDELINE PLANE* BOOM MICROPHONES - LOSSLESS DATA

MIC #	14	15	16	17	18	19
R	0.	17.	31.	43.	54.	35.
THETA, $\theta_s$	90.	90.	90.	90.	90.	<del>90</del> /120
Z	106.	98.	91.	86.	91.	65.
DISTANCE	91.	85.	82.	83.	86.	61.
PHI, $\phi$	0.	11.	22.	31.	39.	35.

INDEX	FREQ						
1	25.	93.5	94.2	98.6	97.0	96.3	96.7
2	32.	93.8	92.9	98.6	99.0	101.2	98.7
3	40.	94.8	95.0	100.4	100.2	102.5	99.0
4	50.	96.0	98.4	103.3	102.0	102.2	101.2
5	63.	96.5	98.7	100.9	98.9	101.0	100.4
6	80.	97.6	99.1	101.8	100.0	102.0	102.7
7	100.	98.1	97.9	98.9	99.4	100.0	100.7
8	125.	98.2	99.1	100.4	100.2	101.0	101.1
9	160.	97.0	97.6	100.1	98.7	99.5	99.7
10	200.	98.0	95.2	98.4	98.4	99.5	100.2
11	250.	96.0	95.6	98.6	97.9	98.5	99.6
12	315.	95.8	94.7	97.6	97.4	99.0	98.4
13	400.	96.2	95.1	97.3	96.9	97.5	98.4
14	500.	96.0	95.1	96.5	96.6	97.2	97.2
15	630.	98.5	98.1	98.6	96.6	98.4	97.3
16	800.	97.1	96.0	97.0	97.8	98.7	96.1
17	1000.	94.4	95.5	95.9	97.6	97.3	96.0
18	1250.	94.5	94.2	94.8	97.0	96.0	94.3
19	1600.	94.2	93.6	97.5	96.8	96.9	93.7
20	2000.	91.4	90.9	94.1	94.2	93.9	91.7
21	2500.	89.8	90.0	91.3	91.2	91.4	91.1
22	3150.	88.8	88.1	89.3	89.4	89.6	90.0
23	4000.	88.6	87.6	87.9	88.5	88.2	88.5
24	5000.	88.3	87.4	86.5	87.1	87.2	85.3
25	6300.	88.2	87.1	85.5	87.2	86.4	86.2
26	8000.	87.1	85.1	82.6	86.1	84.9	86.3
27	10000.	87.5	85.5	80.1	85.3	85.0	85.8
28	12500.	89.0	85.2	78.0	83.0	82.7	82.7
29	16000.	89.1	85.2	78.7	82.3	81.9	82.5

OASPL

109.6 109.6 112.2 111.6 112.6 112.1

FOLDOUT FRAME

PEED = 3615. RPM

PERCENT SPEED 97.0

FOX 12793

HUMIDITY = 53.0 PC

BAROMETER = 29.09 IN HG

XM4 -

FOLDOUT FRAME

2

S.S. 99

263

DATA OF 1218. SUBSET NO. 99. READINGS 195 196 197

SIX DECIBELS HAVE BEEN SUBTRACTED FROM THE ORIGINAL DATA.  
QCSEE OTW ENGINE  
BELLMOUTH, HARD NACELLE  
HARD CORE, NO SPLITTER

ORIGINAL PAGE IS  
OF POOR QUALITY

SPL

LOSSLESS ARRAY

FLYOVER PLANE DATA AT 100.0 FT RADIUS WITH NO ATMOSPHERIC  
(FOR POWER AND DIRECTIVITY COMPUTATION)

ANGLE  $\theta$  0. 30. 40. 50. 60. 70. 80. 90. 100. 110. 120.

COMPUTED OASPL 109.4 111.8 112.6 113.9 114.9 113.9 113.6 114.8 115.6 117.6 119.6

BAND FREQUENCY

1	25	89.7	96.8	98.5	97.8	98.8	100.5	101.5	102.5	102.0	103.2	103.8
2	32	93.3	99.8	100.0	102.8	103.8	101.2	103.8	104.5	102.5	105.5	107.0
3	40	93.8	101.5	103.8	104.2	105.5	103.2	103.5	104.2	105.0	106.8	107.8
4	50	98.0	103.2	103.5	104.5	103.5	101.7	103.2	105.3	107.5	108.5	110.0
5	63	99.3	103.3	103.7	103.0	102.3	101.2	104.0	105.7	106.5	107.8	109.0
6	80	101.3	101.7	99.8	99.0	101.2	101.3	102.8	104.8	106.3	107.5	108.8
7	100	99.2	99.5	96.5	98.2	98.5	101.2	101.3	102.3	104.7	106.0	108.0
8	125	98.4	98.9	97.0	99.7	100.5	101.4	101.7	102.4	104.4	106.2	108.8
9	160	96.5	97.2	98.0	98.4	99.5	99.0	99.9	101.0	101.9	104.9	108.0
10	200	94.9	97.0	97.0	97.7	98.2	98.7	98.2	100.7	101.4	105.4	107.8
11	250	90.9	95.4	93.9	95.5	96.2	97.4	98.2	99.5	101.0	103.7	105.8
12	315	89.9	93.6	93.4	95.2	96.6	97.6	97.2	100.4	99.9	104.4	105.8
13	400	88.9	92.4	93.2	95.1	95.7	97.1	95.1	98.4	98.9	103.6	104.8
14	500	89.1	92.1	93.7	94.4	94.9	95.2	95.4	98.2	98.6	102.9	103.8
15	630	91.3	93.9	98.1	102.4	101.4	100.4	97.8	99.1	98.8	102.3	102.8
16	800	91.1	94.5	99.1	100.8	101.3	100.1	98.1	91.6	97.1	99.6	100.0
17	1000	91.5	92.5	97.2	102.4	102.9	101.7	98.4	95.4	97.0	96.2	98.0
18	1250	90.7	92.0	95.0	101.1	102.8	101.5	97.8	97.8	96.1	94.1	97.0
19	1600	99.6	98.3	101.0	100.6	105.2	102.6	97.3	98.3	95.6	96.6	93.8
20	2000	94.7	94.8	97.3	97.2	101.5	99.3	94.0	93.8	93.2	96.0	93.8
21	2500	91.7	93.0	94.7	97.4	98.7	98.2	92.5	95.4	91.7	93.0	94.8
22	3150	93.3	93.8	94.3	94.7	96.1	95.7	90.6	90.7	91.1	89.7	92.8
23	4000	91.2	92.7	93.2	94.2	95.0	94.2	89.7	91.7	88.7	89.2	86.8
24	5000	90.0	91.7	92.4	94.2	93.5	92.9	88.2	89.0	88.0	86.5	90.0
25	6300	89.4	90.7	91.7	93.1	92.6	92.4	86.7	87.5	87.6	85.8	86.8
26	8000	87.6	88.7	89.6	91.3	90.9	90.2	84.9	85.4	85.0	85.1	86.8
27	10000	87.4	88.5	88.9	91.2	90.7	89.6	83.2	84.3	84.2	84.9	86.8
28	12500	85.8	87.3	87.8	88.9	88.9	89.2	82.4	82.5	82.5	83.8	86.8
29	16000	85.6	87.1	87.8	88.2	88.9	89.8	85.0	84.9	84.9	84.8	86.8

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FOLDOUT FRAME

E ORIGINAL DATA.

CONFIGURATION NO 200  
SPEED = 3615. RPM  
PERCENT SPEED = 97.0

ORIGINAL PAGE IS  
OF POOR QUALITY

E S S A R R A Y

WITH NO ATMOSPHERIC ATTENUATION  
(DIRECTIVITY COMPUTATIONS)

0. 100. 110. 120. 130. 180.

8 115.6 117.6 119.4 118.3 123.3

2.5 102.0 103.2 103.5 105.3 107.5

5 102.5 105.5 107.8 108.0 110.0

2 105.0 106.8 107.7 108.8 114.5

3 107.5 108.5 110.0 110.8 117.0

7 106.5 107.8 109.7 109.8 115.0

8 106.3 107.5 108.8 108.3 114.8

2.3 104.7 106.0 108.5 107.3 112.5

2.4 104.4 106.2 108.7 106.7 110.5

1.0 101.9 104.9 108.7 103.9 108.7

7 101.4 105.4 107.5 103.5 108.0

5 101.0 103.7 105.7 101.0 105.5

4 99.9 104.4 105.2 101.2 104.2

4 98.9 103.6 104.9 100.4 102.6

2 98.6 102.9 103.1 99.1 100.1

1 98.8 102.3 102.3 98.6 99.4

6 97.1 99.6 100.6 97.3 98.3

4 97.0 96.2 98.9 96.0 97.4

8 96.1 94.1 97.5 94.1 95.8

3 95.6 96.6 93.6 92.1 95.3

8 93.2 96.0 93.4 92.7 94.0

4 91.7 93.0 94.2 93.0 93.2

7 91.1 89.7 92.5 86.5 90.9

7 88.7 89.2 86.9 87.2 89.9

0 88.0 86.5 90.1 86.4 88.7

5 87.6 85.8 86.9 86.9 87.9

4 85.0 85.1 86.6 83.9 86.7

3 84.2 84.9 86.2 83.9 89.3

5 82.5 83.8 86.2 83.4 92.1

9 84.9 84.8 86.6 84.9 95.0

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FOLDOUT FRAME

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